SOLICITATION NO. W911KF-05-Q-0049
FURNISH AND INSTALL
ONE UNIVERSAL
HYDRAULIC TEST STAND
DUE 1-27-2005
9:00 A.M.

FOR:

ANNISTON ARMY DEPOT
ANNISTON, AL

BY:

HYDRAULICS INTERNATIONAL, INC.
9201 INDEPENDENCE AVENUE
CHATSWORTH, CA 91311
TEL: (818) 998-1231
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JANUARY 26, 2005

PROPOSAL

UNIVERSAL HYDRAULIC TEST STAND

HII MODEL: HIS-300 SP

FOR:

ANNISTON ARMY DEPOT

DIRECTORATE OF CONTRACTING
7 FRNAKFORD AVENUE
ANNISTON AL 36201-4199

Presented

BY:

HYDRAULICS INTERNATIONAL, INC.
9201 Independence Ave.
Chatsworth, CA 91311

January, 2005

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EXECUTIVE SUMMARY

1.0 INTRODUCTION:

Hydraulics International Inc. (HII) has a 25-year history of designing and building test stands. HII's focus is the design and manufacture of test stands and related components. We offer innovative and cost-effective leading edge products as well as mature designs.

Vertical integration is coupled with a stable, well-qualified design and manufacturing staff to insure product quality and control component lead time for on-time delivery to our customers. Being an environmentally aware company, we use recovered and recycled material where feasible. HII is a three-time small business award winner. Considering HII's proven design and manufacturing expertise delivering similar systems, HII is the most qualified, and able company to design, qualify and produce Universal Hydraulic Test Stand to meet the requirements of the Anniston Army Depot specification SOLICITATION # W911KF-05-Q-0049.

2.0 FACILITY:

Hydraulics International, Inc. maintains three modern facilities in Chatsworth, CA totaling 310,000 sq. ft. HII's engineering concepts are converted to precision realities in fully equipped, modern manufacturing areas encompassing 107,000 square feet. These facilities are equipped with high technology processes such as CNC lathes, computerized tube bending, an automatic press brake and programmable shears. A staff of trained programmers and CNC machines to reduce production time and ensure accurate components are made.

3.0 HISTORY AND ACCOMPLISHMENTS:

HII has a reputable history of worldwide leadership and innovation in the portable and stationary hydraulic test stand industry. In 1978 HII acquired Greer Hydraulic Systems division. At that time, Greer had designed and manufactured more test stands than all other manufacturers in the world combined. HII has continued to innovate on this solid foundation. Besides developing leading-edge test stands, HII has developed, qualified & manufactured many specialized components for use in test stands.

In 1990, HII introduced the first generation of automated Programmable Logic Controller (PLC)-based portable test stands. Since then, the HII Engineering has demonstrated its design capabilities utilizing advanced and proven products as well as custom-made programmed controls to enhance the Systems performance, increase reliability and ease of operation.

Benefited from highly skilled design / systems Engineering Teams coupled with vastly equipped in-house manufacturing capabilities, HII has developed and qualified many specialized components. To name a few: flow control valves, check valves, flowmeters, manifolds, filters assemblies, pneumatic valves & pumps. These components are rated for working pressure of up to 90,000 PSI for hydraulic 20,000 PSI for pneumatic operations.

HII is also an authorized manufacturer of ASME pressure vessels, which is unique capability in our related industry.

As results of these capabilities HII has been able to produce un-comparable systems in performance, quality and cost and be able to control delivery to meet and exceed customer's expectations.

4.0 HII RELEVANT PRODUCTS:

- **JEHA MARK II:**

  A universal hydraulic test console for components and hydraulic systems. Tests rotating and non-rotating equipment, low and high pressure. Capabilities include: pressures up to 5,000 PSI; 30 GPM flow and motor and pump testing with rotational speeds up to 8,000 RPM.

- **JEHA MARK III:**

  A universal hydraulic test console for components and hydraulic systems. Tests rotating and non-rotating equipment, both low and high pressure. Capabilities include: pressures up to 5,000 PSI, 55 GPM flow, motor and pump testing with 100 HP rotational speeds to 10,000 RPM, 20,000 PSI static proof pressure testing and hydraulic fluid cooling system.

- **HIS SERIES OF UNIVERSAL HYDRAULIC COMPONENT TEST STANDS:**

  A component test stand series with the rotating and non-rotating test capabilities for high and low pressure testing. Capabilities include: pressures up to 5,000 PSI, 65 GPM flow, Static test circuits to 30,000 PSI; Automatic fluid temperature/pressure control; AC and/or DC power supplies and rotational speeds to 6,000 RPM.

- **HCT-20 UNIVERSAL HYDRAULIC COMPONENT TEST STAND:**

  Originally designed and manufactured to Unites States Air Force specification requirements to test almost all the hydraulic components of the present and future military aircrafts, including hydraulic Pumps and Motors.

  Two independent circuits create the main hydraulic power system for HCT-20 and are capable of producing flow of 35 GPM at 6000 PSI (65 GPM at 6000 PSI). Other circuits in the system are: "High flow / Low Pressure" circuit (75 GPM to 300 PSI and low flow of 1-5 GPM), "Pneumatic" circuit (up to 8000 PSI) and Hydrostatic circuit (up to 25000 PSI).

  The Universal Test Stand offers two modes of operation to perform a test, "Operator Direct" mode and "Semi-Automation" mode. The "Operator Direct" mode is executed by the operator via Command / Control Stations. The "Semi-Automation" mode allows the operator to input series of commands through SATP (Semi-Automated Test Program) via HMI (Human Machine Interface) and perform the test automatically.

  Other capabilities of the Universal Test Stand are: BIT (Built In Test), which let the operator to verify each circuit automatically, CAC (Computer Aided Calibration) and CAM

(Computer Aided Maintenance). These features assist the operator to maintain the system, reduce the test time and increase the test data reliability.

Two each, independent AC and DC power supplies are controlled either from the front panels of the power supplies or remotely via HMI.

The VSD Console of the Universal Test Stand is designed to perform all the functional testing of the aircrafts' Hydraulic Pumps and Motors. It provides:

- 15000 RPM, 2000 in-pound torque through a 200hp AC Motor which is electronically controlled by a Regenerative Variable Frequency Drive.
- Pump Tests: 110 GPM, 6000 PSI "closed loop".
- Motor Tests: 65 GPM, 6000 PSI.
- Power Transfer Unit (PTU) test capability.
- Electrical Depressurization Valve (EDV).
- Two Case Drain leakages test circuits, each 15 GPM 600 PSI with patch test capability.

- **NAVY HYDRAULIC PUMP TEST STANDS:**
  - Utilizing 200 and 300 HP VSD units with AC motor drives.
- **BOEING MISSILE COMPONENTS TEST BENCH:**
  - Utilizing a VSD that operates to 20,000 RPM.

5.0 QUALITY SYSTEM:

HII is ISO-9001 approved by the United States Department of Defense, Boeing and the British Ministry of Defense. HII is proud to receive the preferred supplier certification award from Boeing: Bronze Level for Business Process, Gold Level for Quality, Gold Level for Delivery Performance and Bronze Level for SPC. HII's unique design and manufacturing history has evolved an engineering and manufacturing team with demonstrated expertise in all areas required to execute the proposed development and production program with a minimum of risk. This proposal is written from knowledge gained through experience.

6.0 PRODUCTS DATA SHEETS:

Please see the following data sheets.

Hydraulics International, Inc.

JEHA MARK II

Universal hydraulic test equipment

- One machine to test virtually all hydraulic circuits in a modern aircraft.
- Tests both rotating and non-rotating components.
- Flow rates to 30 GPM (nominal)
- Pressures to 5000 PSI
- Static pressure to 20,000 PSI
- Human-engineered test console
- For use with all current hydraulic fluids

JEHA MARK II Universal Hydraulic Test Console tests all components and hydraulic systems in today's jet or piston aircraft

Self-contained, the JEHA MARK II needs only connection to electrical power and cooling water sources to be placed into operation.

The all-steel cabinet is designed with convenience and efficiency in mind. An eye-level instrument panel is back-lighted to permit easy reading, and a full-length sump is equipped with drain and covered with perforated stainless steel to provide ample work space. The rear of the machine is left open to permit easy access for inspection and maintenance, and to provide ventilation to all components. Louvered rear doors and acoustical structure undercoating is provided as an option for sound suppression.

Test Capabilities for Non-Rotating Equipment

- Four pressure connections provide flows up to 30 GPM and pressure to 5000 PSI with 60-cycle electrical power source.
- Selector valve circuit provides manual flow cycling of components and may also be used as quick open and close valve control.
- Three return ports are each capable of throttling return flow up to 5000 PSI. One is a metered circuit, diverting the return flow through flowmeters and measuring fluid flow up to 30 GPM.
- A second metered low flow return circuit measures leakage rates up to 4 GPM. Intended to measure case drain leakage of rotating components, this circuit can also be used as a leakage flowmeter for non-rotating parts.
- Separate low pressure fluid supply provides maximum flow of 30 GPM at 500 PSI.
- Static pressure test circuit provides hydraulic pressures to 20,000 PSI for proof tests.

Test Capabilities for Rotating Equipment

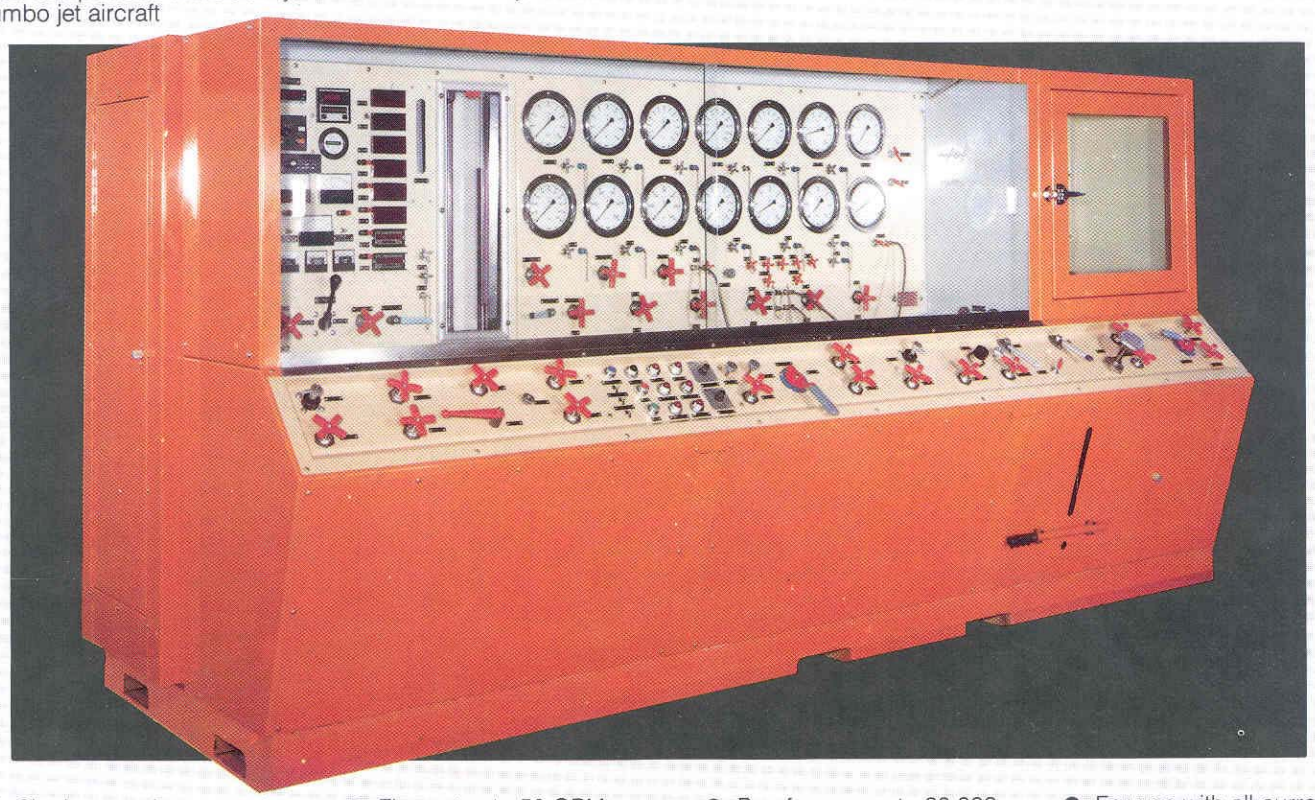
- Hydrostatic drive system permits testing of hydraulic pumps and motors. Consisting essentially of a two-speed gear box driven by a hydraulic motor/pump, the drive system may be used to drive a pump under test or, conversely, as a power absorption source to load hydraulic motors being tested.

Hydraulics International, Inc. 9000 Mason Avenue Chatsworth, Ca. 91311

JEHA MARK III

Hydraulic test stand for jumbo jets

- One test stand for all hydraulic circuits and components in modern jet and jumbo jet aircraft
- Human engineered for noise reduction, safety, convenience
- Enclosed test compartment for pumps and motors



- Single console or remote power supply
- Flow rates to 50 GPM; Pressures to 5000 PSI
- Proof pressure to 20,000 PSI
- For use with all current hydraulic fluids

New JEHA Mark III Hydraulic Test Stand can test all components and hydraulic systems, both rotating and non-rotating, found in today's new generation of jet aircraft

Self-contained, JEHA Mark III can be placed in action simply by connecting the test stand to sources of electrical power, shop air and cooling water.

All circuitry conforms to NEMA, JIC and other applicable codes.

The JEHA Mark III all-steel cabinet is designed for convenience and efficiency, and is human-engineered for safety and minimum maintenance. An eye level instrument panel permits easy reading, while the full-length work area is all stainless steel. A fully enclosed and insulated test compartment minimizes noise levels when testing pumps and motors.

For further noise reduction, JEHA Mark III is available in two styles: an acoustically-treated single structure with four doors at the rear for access to power components; or a two-section arrangement, with power supply system remotely located from the test console.

Test Capabilities

- **100 HP Regulated Variable Speed Hydraulic Drive** includes a hydraulic motor and gearbox with single output spindle. Driving through a two-range gearbox, the unit provides speed ranges of 100 to 4000 RPM and 600 to 10,000 RPM, bi-directional.
- **Hydraulic Circuit,** with 150 gallon stainless steel reservoir, incorporates all components necessary to assure circulation of clean (3 micron absolute) hydraulic fluid, all required test unit inlet and outlet pressures, test until case pressure and adequate cooling capacity. The hydraulic supply section may be included in the main structure, or may be mounted on a separate base for remote location, with remote elect. Volume and pressure controls (optional).
- **Main Supply Pump** is capable of delivery 55 GPM at 3000 PSI or 37.5 GPM at 5000 PSI. The pressure-compensated pump is a variable displacement type with handwheel volume control.
- **A Low Pressure Supercharge Pump** is supplied to boost pressure for test pumps operating at high speeds. The 120 GPM centrifugal supercharge pump supplies up to 100 PSI boost pressure and can be regulated from 5 to 100 PSIG. Pressure for tests at lower and sub-atmospheric pressures is controlled by a throttle valve. As a safety feature, supercharger pump must be operating at preset pressure before main pump will start.
- **20,000 PSIG Auxiliary Static Proof Pressure Pump** is supplied with the stand.
- **Fluid Cooling** is provided by a water-to-oil heat exchanger, and a self-acting controller maintains fluid at 140° ± 10°.

Hydraulics International, Inc. 9000 Mason Avenue Chatsworth, California 91311

JEHA MARK III Hydraulic test stand for jumbo jets

Test Capabilities *(continued)*

- **All Relief and Control Valves** necessary to testing operations are carefully selected and identified with nameplates. Controls, instrumentation and accessory drives are located to permit one operator to perform all phases of the test.

Instrumentation

- Pressure Gauge needle valves are located close to each gauge.
- Speed indicator measures speeds of both hydraulic pumps and fluid motors being tested.
- Temperature Gauge reads fluid temperature from 20° to 220°F.
- Speed controls for the drive unit are located on the control panel.
- Pressure indicating Gauges and instruments are specially selected for hydraulic test service.

SPECIFICATIONS

Pump Tests

Drive speed	100 to 4000 RPM; 600 to 12,000 RPM.
Drive Torque	
Low speed range	100 to 4000 RPM — 1600#in.
High speed range	600 to 10,000 RPM — 675#in.
Test pump output press.	4000 PSI max.
Test pump inlet press.	5 to 100 PSIG

Motor and Valve Tests

Available flow to test motor or valve 0 to 50 GPM at 4000 PSIG. Load pump incorporates valve circuit for bi-directional rotation of motor under test without changing control ports. Load pump also used as drive motor for pump tests.

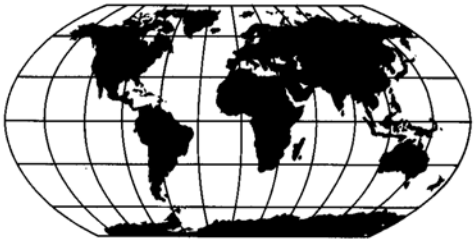
General

Drive horsepower	125 HP
Operating temperature range	90°F to 150°F
Fluid filtration	3 microns absolute
Reservoir capacity	150 Gallons
Supercharger and auxiliary pressure electric motor	15 HP
Regulating valve:	
Boost Pressure	100 PSIG (adjustable)
High Pressure	5000 PSI (adjustable)
Hydraulic Fluid	Skydrol 500-A & B, Aero Safe 2300, MIL-H-5606 or MIL-H-83282

Flow Comparison:
125 HP at 1800 RPM, 60 Cycles 60 GPM @ 3000 PSI; 37.5 GPM @ 5000 PSI
125 HP at 1500 RPM, 50 Cycles 50 GPM @ 3000 PSI; 37.5 GPM @ 5000 PSI

For detailed specifications on H.I.I. JEHA Mark III Jumbo Jet Test Stand, contact: Hydraulics International, Inc.

Hydraulics International, Inc.



A name respected in hydraulics around the world.

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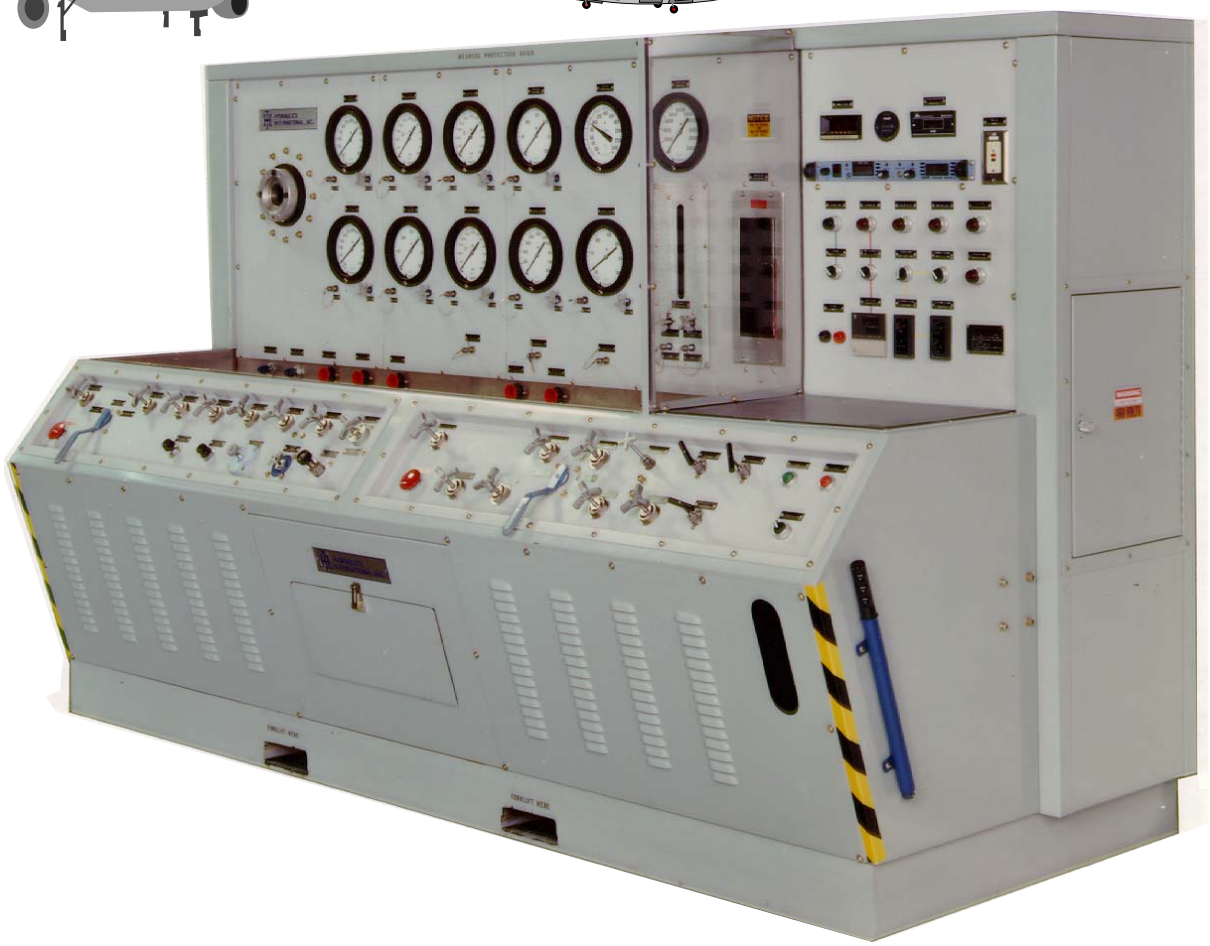
Universal Hydraulic Components Test Machines
HIS-300 Series



Hydraulics Int., Inc. has maintained its leadership in the design, development and manufacture of hydraulic testing machinery for airline, aircraft and accessory manufacturers and military services for well over 20 years. This period of continuous experience in creative design and manufacture, coupled with the recommendations from our world-wide field service organization, has brought into being the advanced design concept represented by the HIS Series of Hydraulic Test Machines and described in this brochure.

For functional and operational testing of all types and sizes of aircraft, missiles, ground support and industrial hydraulic components, valves, actuators, pumps, hydraulic motors, systems and sub-systems.

- **Flow capacities from 5 to 65 GPM.**
- **Constant or infinitely variable flow controls.**
- **Multiple circuits.**
- **Static test circuits to 30,000 PSI.**
- **Automatic Temperature control - Automatic Pressure Control**
- **Constant or infinitely variable pressure controls.**
- **Separate instrumentation for separate circuits.**
- **Pressure capacities from 500 to 5,000 PSI.**
- **Accurate, dependable. Minimum maintenance.**
- **Long trouble-free service.**

HYDRAULICS INTERNATIONAL, INC.

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DETAIL SPECIFICATIONS
CONSOLE

This console is constructed of heavy gauge sheet steel, bent into self-supporting sections and welded together, and welded to a sturdy 6″ to 8″ channel base. The front of the lower section contains large, louvered access panels which are easily removable. A full length door on the right end allows easy access to an enclosure which houses the electrical components. The rear of the machine is open for access and ventilation or as an option doors with louvers can be provided. The instrument panel is made up of multiple sections of steel sheet with the vertical edges turned in for rigidity. These panels are flush-mounted to the vertical surfaces of the console above the work table on a jogged section provided for the purpose. A deep sink, fabricated from corrosion resistant material, covers the whole work table section of the console. A stainless steel perforated plate is mounted over the full sink. A recessed, sloping control panel, incorporating the control valves, is mounted on the front of the machine and can be removed as a module.

DIMENSIONS

See Figure 1.

POWER SUPPLY

The power supply unit is shown in schematic diagram in Figure 2 and consists of the basic components listed. All reservoirs are made of stainless steel and are equipped with baffles, access plates for cleaning, site gauge, fill and vent caps. Vents contain micronic filters and fill caps contain strainers. The hydraulic power supply system is designed as a unit mounted on its own base and installed in the console under the working sump. The main pumps are axial, piston types with guaranteed delivery capabilities of 5,000 PSI for a minimum of 1,000 hours. The variable volume and compensator controls of the main pressure pump are mounted on the valve panel at the front where they are readily accessible to the operator. The pump is integrally mounted on the face of the motor with the shafts precisely aligned and operated through a flexible coupling. Boost pumps are utilized to extend the life of the main pump, and to deliver operating oil to the main pump, thus eliminating possible cavitation.

A filter installed between the main pump and the boost pump utilizes 10 micron elements. The filter sizes employed are a minimum of two times the rate of flow capacity. The elements can be removed from the outside of the machine with standard hand tools.

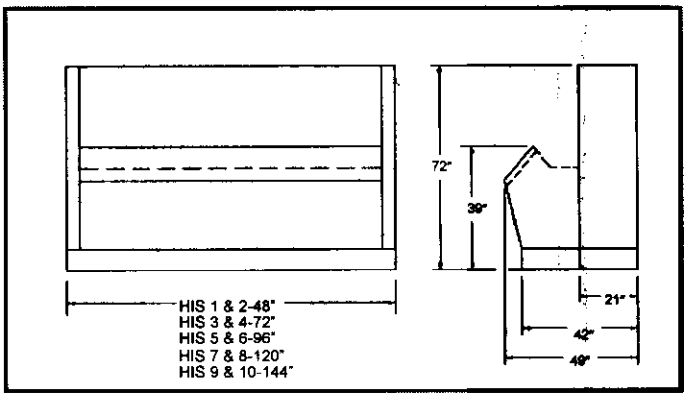


Figure 1. Dimensions All Models

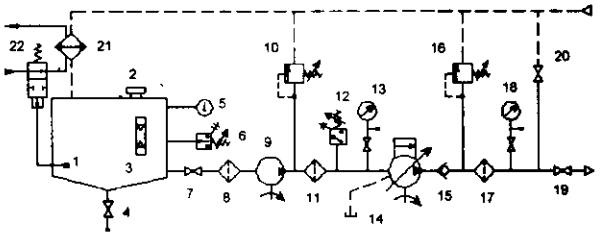
A heat exchanger of sufficient capacity is provided so that normal plant water flowing through the heat exchanger will maintain the required temperature of the hydraulic fluid automatically at all ambient temperatures up to 180°F.

Option: Power supply can be supplied as a separate module in order to reduce noise at the test shop area.

HYDRAULIC SYSTEM

The HIS Series Test Machines are as shown in Figure 3. This system consists of the power supply unit as described in Figure 2, a control system, and an instrumentation system.

The control valves are mounted behind and on an inclined panel in front of the test machine within easy reach of the operator. Control valves utilized are manufactured by Hydraulics International, Inc. and are installed as cartridge units so that the working parts of the valve can be removed from the front of the panel by a single operator without the necessity of opening the system, and without removing any other parts.



1. Reservoir assembly
2. Fill and vent cap
3. Liquid level indicator
4. Drain valve
5. Liquid temperature indicator
6. Temperature switch
7. Supply shutoff valve
8. Strainer
9. Boost pump
10. L.P. relief valve
11. L.P. filter
12. Pressure switch
13. Pressure gauge
14. Main pump
15. Check valve
16. H.P. relief valve
17. H.P. filter
18. H.P. gauge
19. Supply valve
20. Bypass valve
21. Heat exchanger
22. Temperature control valve

Figure 2. Power Supply Circuit

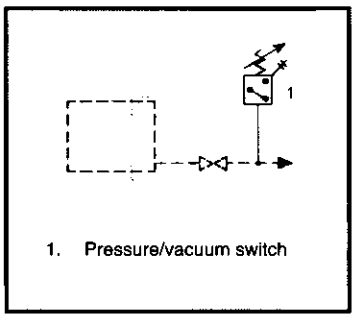


Figure 5.
Automatic Shutdown Circuit
(Code 3)

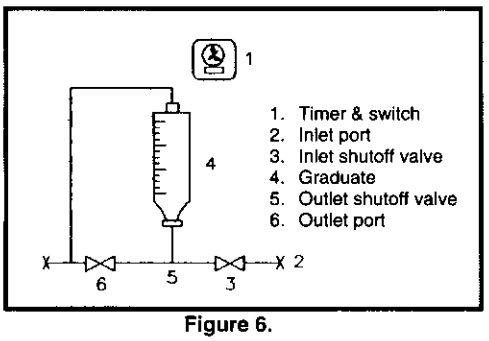


Figure 6.
Leakage Circuit
(Code 4)

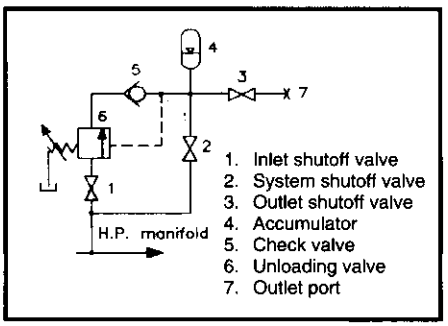


Figure 7.
Unloading Circuit
(Code 5)

A 6″ Dial Compound Gauge, calibrated 0-300 PSI and 0-30 in HG suction leading to an outlet port. This gauge also has a gauge cutoff valve, gauge shutoff, and calibration port.

Note: In addition, there is a 6″ dial system pressure gauge 0-6,000 PSI, and a system temperature gauge 6″ dial 20-240°F mounted on the panel. These two instruments are included as part of the power supply system.

Codes 1 and 2: A Flowmeter System is included with options of either 250 mm scales or 600 mm scales, depending upon the requirements of the customer. Single or multiple tubes are available to meet the reading accuracies and ranges required. Code numbers for flowmeters required should be selected from the chart, Figure 4.

Code 3: Filter Signal. This consists of a suction switch mounted between the reservoir and the main filter so that when the filter becomes clogged and requires replacement the switch will automatically cutoff the electric motor and actuate a light on the instrument pane. See Figure 5.

Code 4: Special Leakage Graduate (10 cu.in.) and circuit for testing external hand pumps is incorporated into the static leakage test circuit. A timer is used for leakage measurements, as shown in Figure 6.

Code 5: Pressure Unloading Circuit. See Figure 7. This circuit can be provided to test accessories which require a pressure unloading system either in complete pressure manifold of the machine and/or through an outlet port. It consists of a pressure unloading valve, check valve and accumulator with isolating shutoff valves.

Code 6: Bladder Type Accumulator (3,000 PSI) circuit, consisting of a bladder accumulator, an isolating valve, a connecting port and shutoff valve, as shown in Figure 8, with its accessories as required for testing pressure unloader regulator valves if unloading circuit in Code 5 is not included.

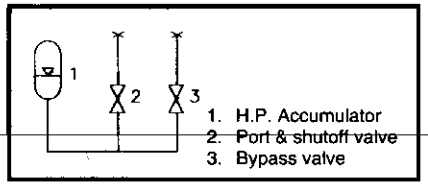


Figure 8. Accumulator Circuit (Codes 6 & 7)

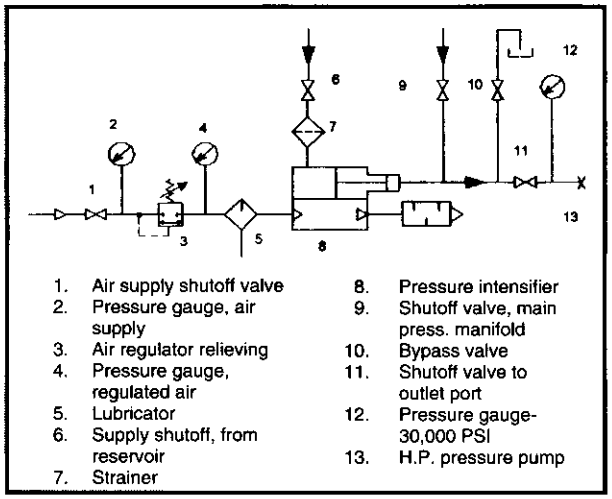


Figure 9. Boost Pressure System (Code 8)

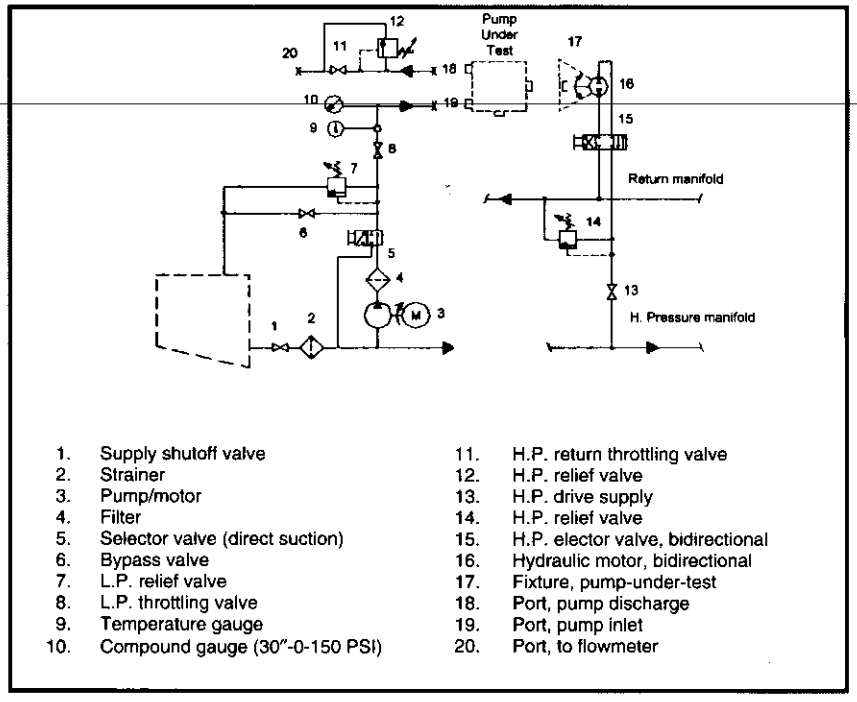


Figure 10. Reversible Pump Test Drive Circuit (Code 9)

- A Structure Assembly as previously described.
- A Power supply referred to and described in Figure 2.
- Selector Valve Assembly, consisting of a cone type, four-way selector valve with two cylinder outlets, and pressure shutoff valve Figure 3.
- A Single Outlet Valve Assembly, consisting of a system shutoff valve and a port assembly, a gauge shutoff valve and connecting port.
- Dual Outlet Valve Assembly, consisting of a system shutoff valve, two pressure shutoff valves and matching outlet ports, a gauge shutoff valve and connecting port, plus a pressure bypass valve to the return manifold block.
- A Flowmeter Bypass System, consisting of a connection from the pressure manifold through a pressure shutoff valve to the flowmeter assembly, a connection from an outlet through a shutoff valve to the flowmeter assembly and from the flowmeter to the return manifold.
- A High Pressure Static System, contains a hand pump, outlet and return ports with port shutoff valves, a filler and check valve, a connection to the power supply reservoir, connecting valves to the pressure manifold, and a bypass valve to the return manifold and a 20,000 PSI pressure gauge. (As an option a 30,000 PSI booster system is available.)
- A Return Manifold, contains connections to all bypass valves, the flowmeter return, and incorporates two shutoff valves leading to return port connection.

NOTE: All pressure ports are located on an inclined panel in the sump facing away from the operator for safety. All return ports are mounted in the sump facing the operator.

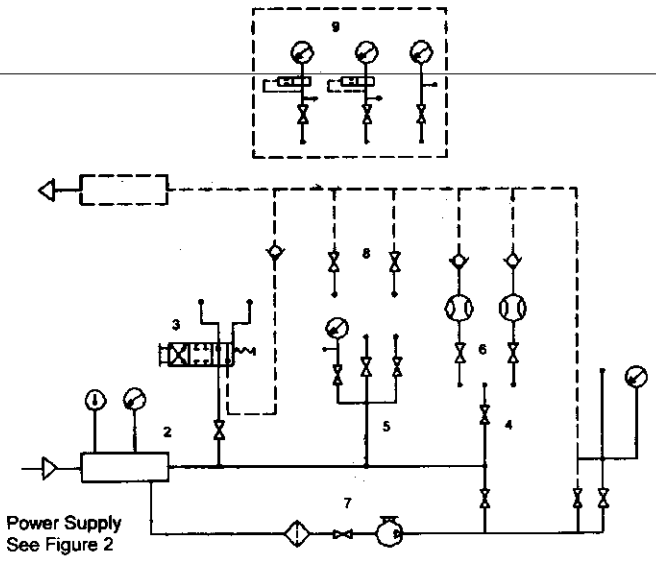
- An Instrument Panel with Gauge Grouping consists of the following:

	FLOWMETER OPTIONS		
	SPECIFY CODE NO.		
	600 MM ± 1% ACC.	250 MM ± 2% ACC.	MAX. FLOW IN GPM
	1A	2A	6
	1B	2B	8
	1C	2C	10
	1D	2D	12
	1E	2E	20
	1F	2F	25
	1G	2G	30
	1H	2H	35
	1J	2J	40
	1K	2K	50
	1L	2L	60
	1M	2M	75

Figure 4. Selection of Flowmeters (Code 1 and 2)

A 6″ Dial Pressure Gauge, calibrated 0-6,000 PSI leading to an outlet port on the instrument panel with gauge shutoff and calibration port.

A 6″ Dial Pressure Gauge, calibrated 0-1,000 PSI, leading to an outlet port mounted on the instrument panel with an automatic gauge cutoff valve, gauge shutoff valve, and calibration port. The gauge cutoff is set so that pressure above 1,000 PSI cannot reach the gauge.



1. Structure
2. Power supply consisting of electric motor, pump, regulating valves, filters, cooler, system temp. & pressure gauges
3. Selector valve circuit consisting of - selector valve, shutoff valve, check valve, 2 outlet ports
4. Single outlet circuit consisting of - system S.O. valve gauge - outlet ports
5. Dual outlet valve assembly
6. Flowmeter bypass circuit consisting of - system S.O. valve inlet port & shutoff valves to flowmeters
7. High press. static system consisting of a filter, hand pump (10,000 PSI) press. gauge, press. port, press. shutoff valve
8. Return circuit consisting of 2 return ports, 2 control valves
9. Gauge grouping consisting of compound gauge 30″ HG-0-300 PSI Press. Gauge 0-1000 PSI Press. Gauge 0-5000 PSI Gauge ports, shubber valves, gauge cutouts

Figure 3. Basic Hydraulic System

Code 7: Bladder Type Accumulator (5,000 PSI) circuit, consisting of an accumulator, an isolating valve, a connecting port and shutoff valve, as shown in Figure 8, with its accessories as required for testing pressure unloader regulator valves, if unloading circuit in ***Code 5*** is not included.

Code 8: Boost Pressure System - Figure 9. This is a 30,000 PSI static pressure system for performing high pressure static and leakage tests. This system connects to the main pressure manifold through a system shutoff valve, to an air-to-oil intensifier with 120 PSI air applied to one end of the intensifier will develop 30,000 lbs. oil static pressure. The ultra high pressure valve system is supplied with a high pressure outlet port and connects to a 30,000 PSI, 6″ precision gauge.

Code 9: Hydraulic Reversible and Variable Speed Drive and boost pump installation for testing hydraulic pumps. The drive has a speed range of 0-6,000 rpm. Adapter pads AND-20001, AND-20002 and 12 and 16 tooth spline blocks are provided. An electronic tachometer is calibrated 500 to 6,000 rpm. Variable suction or positive pressure heads can be applied to test pump as required. A 6″ compound gauge measures pump input pressure. See Figure 10.

Code 10: DC Power Supply. This regulated unit contains a 0-30 volt DC voltmeter, 0-20 amp DC ammeter. The instrument accuracy is 2% of full scale.

Code 11: High Pressure Filter - 10μ Nominal or 3μ Absolute Filtration.

Code 12: Safety and Splash Shield. Transparent safety glass or Plexiglass around test bench or pump test area can be provided as an option.

AVAILABLE MODELS

There are 11 basic models in the HIS series Hydraulic Accessories Test Machines, as described on the Ordering Chart - Figure 11. As shown in the figure the machines are available for either 50 or 60 cycles with constant flow, variable volume or pressure compensated pumps, and for the various fluids including Specification MIL-H-5606, Skydrol 500A or B, Oronite, or as specified. Larger sizes beyond the HIS-12 (125 HP) can be supplied upon request. JEHA MARK II, brochure HIS-100 or the JEHA MARK III, brochure HIS-200.

Additional outlet port systems can be added to the basic model, upon request.

Additional pressure gauge assemblies can be installed on the panel upon request. These gauges are fitted with calibration ports, needle valves, and pressure cutoff valves.

To meet unusual requirements a torquemeter for measuring drive torque of hydraulic pumps, calibrated 0-1,000 in.-lb., accuracy full scale, can be supplied at special request.

ORDERING INSTRUCTIONS

Select basic model number from the Ordering Chart, Figure 11. To this model number add suffixes shown in the Ordering Chart, Figure 11 thereby specifying cycles, pump characteristics, fluid use or explosion proof construction. Add code numbers for accessory systems you wish to include.

EXAMPLE: HIS-3, D, V, S, -1C, -5, -11.

This orders a standard 20 HP HIS-100 Series Universal Hydraulic Accessories Test Machine (HIS-3), for 60 cycle operation (D), variable volume pump type (V), for Skydrol fluid (S), with the following accessory systems: 600 mm flowmeter-maximum flow 10 GPM plus or minus 1% accuracy (1C), Pressure Unloading Circuit (Code 5), High Pressure Filter (Code 11).

NOTE: If hydraulic fluid is not listed in Figure 11, specify fluid and viscosity.

If extra circuits are required, please define. If your basic requirements cannot be met by the HIS-300 Series Test Machines as described in this brochure, please contact the factory for configurations to meet your exact requirements.

SPECIFY SUFFIXES

BASIC MODEL NO.	ELEC. POWER SUPPLY: 60 CYCLE	ELEC. POWER SUPPLY: 50 CYCLE	PUMP TYPE: VAR. VOL.	PUMP TYPE: PRES. COMP.	FLUID TYPE: CON. FLOW	FLUID TYPE: MIL-5606, MIL-H-5606 MIL-H-83282	FLUID TYPE: SKYDROL	FLUID TYPE: ORONITE	FLUID TYPE: SPECIFIED	HORSEPOWER	MAX. FLOW GPM AT MAX. PRESS: MAX. PRESSURE P.S.I.	MAX. FLOW GPM AT MAX. PRESS: 60 CYCLE	MAX. FLOW GPM AT MAX. PRESS: 50 CYCLE
HIS-1	D	E			C	M	S	O	X	10	3000	6	5
HIS-2	D	E			C	M	S	O	X	15	3000	8	6
HIS-3	D	E	V	R	C	M	S	O	X	20	5000 3000	6.5 10	6.5 8.5
HIS-4	D	E	V	R	C	M	S	O	X	30	5000 3000	10 10	8.5 8.5
HIS-5	D	E	V	R	C	M	S	O	X	30	5000 3000	10 17.2	10 16.5
HIS-6	D	E	V	R	C	M	S	O	X	40	5000 3000	13 22	13 22
HIS-7	D	E	V	R	C	M	S	O	X	50	5000 3000	16.5 30	16.5 25
HIS-8	D	E	V	R	C	M	S	O	X	60	5000 3000	20 35	20 35
HIS-9	D	E	V	R	C	M	S	O	X	75	5000 3000	25 40	25 35
HIS-10	D	E	V	R	C	M	S	O	X	100	5000 3000	35 60	35 50
HIS-12	D	E	V	R	C	M	S	O	X	125	5000 3000	40 65	40 60

Figure 11. Ordering Chart (see example)

HIS-300 Series

offers accuracy, maintainability, reliability, and long-life

FEATURES. Functional arrangements are such that testing of components is easy, fast and efficient. All controls are mounted on an inclined panel at the front of the machine within easy reach of the operator. Pressure connecting ports are mounted on an inclined panel on the front of the sump and face away from the operator so that pressure connections to the equipment under test are within easy reach. These ports are positioned adjacent to the control valves for ease of identification. Return ports are mounted on the vertical panel of the sump facing the operator and opposite the pressure ports. With this arrangement the operator is protected against discharge of hot oil if a valve is inadvertently left open. This arrangement also makes it unnecessary to reach across and around the equipment under test in order to operate the valves. A perforated stainless steel work table is mounted in the sump below the valve ports and above the inclined bottom of the sump to provide a flat, clean, oil-free working area.

ACCURACY. All gauges, flowmeters and other instrumentation are mounted on a vertical instrument panel behind the sump and are located for easy reading from any position. All instruments are calibrated to a high degree of accuracy consistent with the most rigid specifications in the aircraft industry. All gauges and meters are provided with facilities for contamination-free re-calibration, without removal from the machine. All gauges utilize 6″ dials and are guaranteed to 1/2 of 1% accuracy full-scale. Flowmeters are guaranteed to 1% accuracy full-scale. Higher degrees of accuracy can be obtained upon request.

MAINTAINABILITY. With the exception only of the pump and motor assembly, every component is accessible from the outside of the machine and can be readily repaired. The pump and motor assembly can be removed as a unit by disconnecting two swivel hose connections, and four bolts. All the electrical equipment is housed in a single box mounted on the side of the machine and is installed in such a manner that repairs or replacements can be made from the outside of the machine without disturbing any other component.

RELIABILITY. Hydraulics International, Inc., with extensive experience dictates the choice of the finest components and instruments, with years of proven dependability. This, coupled with the expert, specialized craftsmanship of men who take pride in their work, and backed by a management philosophy devoted to turning out the very finest test machinery in the industry, results in equipment with a high built-in reliability factor.

LONG-LIFE. Hydraulics International, Inc. Test machines are famous for their long service life, resulting from experience in building the finest hydraulic test equipment of its kind. Many machines have been in continuous operation better than 20 years with a minimum amount of maintenance. The construction and selection of components is such that a 20 year life span can be expected with proper use.

GENERAL SPECIFICATIONS.

This brochure covers the Hydraulics International, Inc. Standard Series of Universal Hydraulic Accessory Test Machines, designated as the HIS Series, for the purpose of testing airplane, missile or support equipment hydraulic components such as actuators, control valves, regulators, accumulators, specialty valves, manifolded sub-systems and systems.

The machines in the HIS-300 series are rated for 5,000 PSI maximum, 3,000 PSI normal operating pressures and flows from 5 to 65 gallons per minute. 5 sizes of consoles are available. See Figure 1.

Electric motor and starter combinations are available for 230/460-60 cycle-3 phase; 208/380-50 cycle-3 phase. Special voltages are available. Contact the factory with specifications. " Part-winding " starting is available on motors above 50 HP. The electric motors utilized are open drip-proof, in accordance with the requirements of American Standard C-50 N.E.M.A. Standard MG-I and National Board of Fire Underwriters Pamphlet #70. Fully enclosed or explosion-proof electrical equipment is available upon request.

HCT-20
HYDRAULIC COMPONENT TEST STAND

HYDRAULICS INTERNATIONAL, INC.

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HCT-20
HYDRAULIC COMPONENT TEST STAND

The model HCT-20 Hydraulic Component Test Stand has been designed to perform all functional and operational tests on hydraulic components, including (and not limited to) motors, pumps, actuators and control valves, from both rotary and fixed wing aircrafts.

Configuration

- **Type I:** Combination of hydraulic component test station and VSD console.
- **Type II:** Hydraulic component test station only. No VSD console

***Note*:** *VSD console* (*for Pump and Motor Tests*) *can be added to Type II via simple connections.*

Dimensions

Configuration	Length	Width	Height
Type I	124”	72”	80”
Type II	96”	48”	72”

Capabilities

- **Manual or Automated Control Modes**
  - Human/Machine Interface (HMI).
  - Display Panels - *flow, pressure, temperature & warning signals.*
  - Manual Control Panels (MCP) - membrane/push button with illumination.
  - Programmable Logic Controller (PLC).
  - Semi-Automated Test Programs (SATP).
  - Built in Test (BIT).
  - Computer Aided Calibration (CAC).
  - Computer Aided Maintenance (CAM).
- **Main Hydraulic Circuit**
  - Two independent circuits: Up to 33 gpm & 3000 psi each.
    - In combination: Up to 65 gpm & 3000 psi or 33 gpm & 6000 psi.
  - Actuator Test Circuits: 2 each.
  - Supply and Return Ports: 4 each.
  - HP Supply Circuit filtration: 3-Micron absolute.
  - Return Circuit filtration: 10 micron absolute.
  - Supply Circuit flow meters: 0.1 - 40 gpm.
  - Return Circuit flow meters: 0.1 - 70 gpm.
  - Return Circuit Back-Pressure Controls: 0 – 6000 psi.
- **Auxiliary Circuit**
  - High Flow: Up to 70 gpm & 300 psi.
  - Low Press: low flow & 0 – 25 psi.
  - Supply Circuit flow meter: 0.1 – 70 gpm.
- **Hydrostatic Circuit** Up to 25000 psi.
- **Pneumatic Circuit (GN2)** Up to 8000 psi.
- **VSD Console for Pump and Motor Tests (Type I only)**
  - AND 20002 test Pad.
  - High Speed Induction Motor: 200 hp, 2000 in-lb torque, 15000 rpm bi-directional.
  - Regenerative Variable Frequency Drive: Operates and precisely controls the High Speed Motor.
  - Pump Test Circuit: Closed Loop, up to 110 gpm & 6000 psi.
  - Pump Case Drain Circuit: Two independent circuits.
  - Open Loop, up to 10 gpm & 600 psi.
  - Proof Test, without disconnecting hoses from UUT.
  - Ports for Patch test.
  - Electrical Depressurization Valve (EDV Testing).
  - Motor Test Circuit: Open Loop, up to 65 gpm & 6000 psi.
  - Power Transfer Unit (PTU) test circuit.
- **Electrical Power Supplies**
  - Two Independent AC Power Supplies: 5000 VAC.
    - Adjustable 0-135 VAC, L-N, 3 or 1 phase.
    - Adjustable 0-40 Amps.
    - Adjustable 45-500 Hz.
  - Two Independent DC Power Supplies: 3000 VAC.
    - Adjustable 0-50 Volts.
    - Adjustable 0-60 Amps.
- **Reservoir:** 55 gallon Stainless Steel Construction, Heating Circuit - up to 225°F. Low Fluid Level & High Temp. Shutdown, 3-Micron absolute filtration circuit.
- **Sink/Test Bed:** 300 Series Stainless Steel UUT Tie Down, Supply/Return Ports and Electrical Connectors Illuminated.
- **Storage Compartments:** Storage areas, Writing Pads.
- **Protective Shields:** ½ inch thick clear shield on both consoles slide away and/or removable.
- **Construction**: Eight Inch Fork Lift Pockets - 36” Centers, Integrated Drip Pan, Lift-off Doors, Removable Access Panels Painted, 12 Gage Steel Panels, Stainless Steel Tubing and Fittings, Manifolds with integral control componentry.

Major Components:

- Main Circuit: Two variable displacement, pressure compensated, axial piston pumps – e*lectronic flow & press controls*.
- Auxiliary Circuit: Internal Gear Pump, *variable flow capability*.
- Relief & Bypass Valves: p*roportionally Controlled*.
- Water-Oil coolers: Brazed Plate – *compact, low water consumption*.
- Flow Meters: Positive Displacement - c*onsistent accuracy*.
- Pressure Transmitters: Shunt Calibration - *0.5% accuracy*.
- VSD Motor: Induction - 200 hp, High Speed, Copper cage & kapton insulation – *minimize the electrical losses*, ceramic bearings, oil-air lube - *extend motor life*.
- Drive: Variable frequency fully regenerative, Insulated Gate Bipolar Transistor (IGBT) Inverter & Converter - *high efficiency, low noise*.

Facility Utility Integration

- **Power: Voltage:** 460VAC, 60 Hz, 3 Ph or 380-415VAC, 50 Hz, 3 ph
  Amperage: Type I: 540 Amps, Type II: 240 Amps
- **Water:** Supplied by Closed Loop Chiller
  Type I: 50 gpm @ 50°F, Type II: 25 gpm @ 50°F

Note: *HII is able to supply Air-Cooled Chiller System with Multi-Staged Compressors and integral Circulation Pump (optional item)*

- **Gaseous Nitrogen:** 500-3,000 psi (recommend “K” bottle).
- **Shop Air:** Filtered Air, 100 psi min.
- **Installation and Recommended Working Area:** Drawings available upon request.

HYDRAULICS INTERNATIONAL, INC.
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SOLICITATION REQUIREMENTS

FOR

UNIVERSAL HYDRAULIC TEST STAND

- ANNISTONARMY DEPOT
  SOLICITATION # W911KF-05-Q-0049

- Amendment 0001, issued 14-Dec 2004
- Amendment 0002, issued 20-Dec 2004
- Amendment 0003, issued 06-Jan 2005
- Amendment 0004, issued 18-Jan 2005
- Amendment 0005, issued 21-Jan 2005

COMPLIANCE MATRIX

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.0 Hydraulic Requirements	The Test Stand shall consist of the following major components: Hydraulic System, Electrical System, Cooling System and all accessories req'd.	Fully in compliance	Consists of: Hydraulic System. Electrical System. Cooling system. Accessories / supportive equipment.	Section I
3.1 Subsystems	Consists of: Main System Pressure Circuit. Auxiliary Pressure Circuit. Static Pressure Circuit. Suppercharge (pump test) Circuit. Motor Circuit.	Fully in compliance	Consists of: Main Pressure Circuit. Auxiliary Pressure Circuit. Static Pressure Circuit. Suppercharge Circuit. Motor Circuit. All components compatible with MIL-PRF-46170C.	Section I
3.1.1 Main Sys circuit 3.1.1.2 3.1.1.2 3.1.1.3	Main System Pressure Circuit: Flow up to 60 gpm to 3000 psi through needle type shutoff valves at min. of two outlets. Selector valves. System by-pass. Return ports- flowmeter.	Fully in compliance	Main System pressure Circuit. Provides 60 GPM to 3000 PSI. Supply Ports: P1 and P2. Supply Ports: CYL 1 and CYL 2. System bypass. 4 Return ports , 4 flowmeter.	- Section III - 3.3 - 3.4 - 3.5

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.1.2 Aux press circuit	10 gpm @ 5000 psi. Shut off & by-pass valve.	Fully in compliance	10 gpm @ 5000 psi. Supply Port 3. Shut of bypass.	-Sect III
3.1.3 Static press circuit	Provide 10,000 psi.	Fully in compliance	Supply Port: P4 10,000 psi with 100 psi shop air	-Sect III - 3.6
3.1.4 Pump test circuit	Flow 0-60 gpm, Press 0-100 psi. Motor: 80 HP. Torques 236 ft-lbs @ 1800 rpm. Speed 0-4800 rpm. Speed regulation < 0.5%. Torque sensor 0-300 ft-lbs +/- 0.5%.	Fully in compliance	Flow0-60, Press 0-100 psi High speed motor: 81 HP. Constant 126 ft-lb @ 1800 rpm. Speed 0-5000 rpm. Speed regulation < 0.1%. Torque sensor 0-300 ft-lbs +/- 0.5%.	Sect III 3.7 & 3.10.1 1.4 3.10.11
3.15 Motor Test circuit	Dynamometer. Main and Aux pump variable flow, press compensated. Elect. motor Main pump :100 HP. DC Power Supply.	Fully in compliance	Dynamometer (see above). Variable displacement, pressure compensated Main and Auxiliary pumps. Electric motor for Main pump: 125 HP. DC Power Supply Adjustable 0-40 VDC & 0-70 Amps.	1.4 2.4, 2.7, 2.8 3.10.7 3.10.11
3.2 Material	3.2.1, 3.2.2, 3.2.2.1	Fully in compliance	Best material used for the purpose in good commercial practice. Corrosion resistant and Protective coatings.	2.2, 3.2

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.3 Design	3.3.1 thru 3.3.17	Fully in compliance	Ergonomically designed. Meets and exceeds all required features in paragraphs 3.3.1 thru 3.3.17. Ref to the Main Test Stand Structure.	Sections I, II and III
3.4.1 Electrical	230/460 volt, 3P, 60 HZ.	Fully in compliance	230/460 volt, 3P, 60 HZ. Electrical wiring for both 230 & 460.	1.4 Section IV
3.4.2 Electrical noise	Facility elect noise.	Fully in compliance	Anticipate no problem	
3.4.3 Safety & Health Req	OSHA.	Fully in compliance	HII design meets the specified requirements. HII has delivered many test stands for similar military environment / applications.	Executive summary
3.4.4 Noise level	Max 80-decible.	Fully in compliance	Shall meet 80 dba level. Hydraulic Power Supply is in separate cabinet and will be located outside.	Sect. I Sect. II
3.4.5 Hydraulic Fluid	Hyd Fluid: MIL-PRF-46170C.	Fully in compliance	Compatible with: MIl-PRF-46710C HII has delivered many Test Stands with the same fluid.	Sect I

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.6 Temp Control	Fluid Temp. control: ± 5 F. Instrument Accuracy ± 2 %.	Fully in compliance	There are two Temp. control systems. One in Hydraulic Power Supply and the other in the Main Test Stand. These systems regulate temperature of the hyd. fluid within ± 5°F. An emersion heater in the reservoir. Temp display instruments provide accuracy of ± 2%.	Sect II Sect III 1.3 3.10.6
3.4.7 Filtration	Filters with the differential press. switch. Easy Access.	Fully in compliance	Filters are commercial types with "Absolute Rated" Micronics filter elements. Supply filter elements are 3 micron Absolute and Return filter elements are 10 micron Absolute. Each filter assembly is equipped with Differential Pressure (DP) switch. Warning lights on the panel (Main Stand) indicates replacement of filter elements. Easy access to filter elements for maintenance. A strainer is provided within the reservoir with easy access for cleaning.	Section I, II And III

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.8 Water Removal	Remove accumulated water. Water removal system	Fully in compliance Option	A drain port is provided at the bottom of the reservoir. Accumulated water in the Reservoir can be drained via this port. OPTION: see section X for water removal system	Sect. I, Sect. II Sect. III Section X
3.4.9 Reservoir	75 to 100 gallon reservoir. Oil level indicator and temp gauge. Easy for cleaning.	Fully in compliance	75 gallons stainless steel reservoir equipped with hyd oil level gauge, temp. switch, heater, strainers, shutoff valves, drain valve, baffles, fill port and clean out access with covers. Located in the Hyd. Power Supply module with proper structure to withstand climatic extremes encountered in Anniston Alabama.	Sect. II 2.3
3.4.10 Hydraulic Fluid Containment	Hydraulic Fluid containment in case of major fluid spill.	Fully in compliance	Each module, Hydraulic Power Supply & Main Test Stand is constructed with a drip pan which holds hydraulic fluid in case of major spill and accident. Drip pan is welded to the bottom of each module and do not extend beyond the envelope structure. It has capacity to collect entire fluid from (via doors and the reservoir and the systems in case of a major spill	Sect II 2.2 Sect III 3.2.6

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.11 Cooling System	Cooling system to maintain fluid temperature.	Fully in compliance	There are two Temp. control systems. One in each module (hyd power supply & the Main Stand). These systems regulates temperature of the hyd. fluid within ± 5°F. Each system has Brazed Plate type, oil/water heat exchangers which is superior in performance to the other types available in the market. Each requires water at approximately 70°F, 10-15 gpm and 40-70 psi pressure. A heater in the reservoir. An electronic temperature controller regulates the oil temp. and the operator can set the temp. between 70 to 200°F.	Sect I Sect II Sect III
Trade-off Factor	Closed-loop Cooling System	Option	**HII has provided a proposal for the Closed-loop Cooling System within the content of this document**. HII has proposed a closed loop system "Chiller System" which contains a 40-ton Air-Cooled water chiller, coolant fluid holding tank, circulation pumps, valves, temperature gauge etc. Also an operator control panel with diagnostic info. Capable of delivering coolant fluid as low as 50 °F to the Test Stand.	Section IX

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.12 Immersion Heaters	Immersion heater. Automatic shutoff when fluid above the max level.	Fully in compliance	There is an immersion heater in the reservoir below fluid level (6-8 inches). Operator can set the temperature with the manual control setting located on the panel of the Main Test Stand panel. The heater in conjunction with the cooling systems (heat exchangers) maintains the fluid temp. within ±5°F when the control is set in the range of 70 to 180°F. There is an over-temp. Switch that shuts off the heater when the fluid reaches 15°F) above the max. reservoir operating temperature at the fluid temp of 195°F	Sect II 2.3
3.4.13 Calibration	Calibration procedure shall include step-by-step instruction. Include any special adapter, fixture etc.	Fully in compliance	The calibration procedure with step-by-step instruction is provided with the Test stand. Also provided is a special fixture to calibrate Torque Transducer on the Test Stand without removing it. This fixture is unique and has been designed by HII. Any other special tools and adapters used in calibration will be provided by HII.	Section V
3.4.14 System of Units	Apply U.S. Customary System of Units.	Fully in compliance	The Test Stand displays all the U.S. Customary System of Units.	

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.15 Utilities	Elect.: 3 Phase, 60 Hz, 460 volts. Shop Air: 100 psi. Water: 75 psi.	Fully in compliance	The Test Stand is compatible with the facility utility: 460 volts, 3 Phase, 60 Hz. compatible with Air and water pressure.	Section I 1.6 Section IV
3.4.16 Drainage	The contractor responsible for drain lines and tie into the existing sanitary line.	Fully in compliance	The Test Stand requires no drain line into the sanitary line.	
3.4.17 Ergonomic	Test Stand shall be ergonomically designed.	Fully in compliance	The Test Stand is ergonomically designed. All the operational controls are at the operators reach from the Main Test stand. Instrumentations are located for easy viewing. Other features considered in the design: toe clearance, work bench location, lights, accessibility to components for calibration and maintenance etc. HII has extensive experience in design and manufacturing test stand. Please see the HII relevant product data sheets.	Section II Executive section and relevant product info. at
3.4.18 Maintainability	Commercial off-the-shelf (COTS) components.	Fully in compliance	The majority of the component of the HII proposed test stand HII model HIS–300 SP are COST, or similar to components used in the other test stand manufactured by HII for the military and /or commercial applications.	Executive section HII relevant products

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
3.4.19 Construction	Corrosion resistant material.	Fully in compliance	All material is protected from corrosion. All the steel parts are painted or plated to prevent corrosion. Test Stand cabinet is painted with Stainless Steel sink. Hydraulic Power Supply construction is Stainless Steel and painted steel.	Sections I, II and III
3.4.20 Name plate	Nameplate. Lubrication plate.	Fully in compliance	There will be a nameplate attached to the Test Stand which contains as minimum item a. thru i. of the spec. 3.4.20 para. Lubrication plate will be attached to the modules with: points of lube application, service interval and type of lubricant with SAE number if applicable.	
3.4.22 Environmental Compliance	Comply to EPA regulations.	Fully in compliance	Test Stand meets applicable EPA regulations. The compliance to EPA regulation also applies to manufacture, service, transportation, storage and operation of the test stand.	
3.4.23 Recovered Materials	FAR	Fully in compliance	HII will follow the process of "the recovered material" under FAR to the extent that is practical and possible.	

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
4.0 Calibration	The contractor to verify the Test Stand calibration after the installation IAW the contractor procedure. ANAD personnel to perform the calibration.	Fully in compliance	Upon installation HII engineer(s) will guide ANAD personnel to perform the calibration IAW HII Calibration Procedure. This will be combined with Verification / Performance Test and the Training.	Section V
4.1 Performance Test	The contractor to demonstrate the test stand capability.	Fully in compliance	Upon installation and calibration, HII shall demonstrate the Test Stand capabilities to perform manual testing. HII shall demonstrate performance by testing the provided GFE (Para 9.0 of the specification). ANAD personnel, Contracting Officer or the representative could witness this test.	Section VI
4.2 Acceptance	Final acceptance at Anniston Army Depot IAW para. 4.1 “Performance Test”.	Fully in compliance	HII acknowledges that the acceptance test to be at Anniston Army Depot IAW para. 4.1 “Performance Test”.	Section VI
5.0 Installation and Delivery	The contractor to deliver and install the Test Stand: 30 day calendar days for Installation and testing.	Fully in compliance	HII will deliver the test stand to building 117 at Anniston Army Depot. HII will install the Test Stand, and complete all the tests within 30 calendar days.	Sections VI & VII

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
5.1 Delivery		Fully in compliance	HII will notify C.O. 14 days prior to shipping. HII acknowledges the facility will not be ready until March 2006.	Section VII
5.2 Installation		Fully in compliance	HII will install the Test Stand at the designated area. Locate the Main Test Stand in the shop area and the Hydraulic Power Supply at a designated outside area. Interconnect elect. and plumbing lines. Connect to facility lines Start up.	Section VI
5.2.1 Installation plan	Within 270 days after award of the contract, the contractor to provide an installation plan	Fully in compliance	HII will provide installation plan as described in para 5.2.1 of the Spec. within 270 days after the contract award date to the Contracting Officer. This will include plan for delivery & installation, drawings indicating the dimensions, facility hook ups etc.	Section VI
5.2.2 Electrical		Fully in compliance	All material used in installation will comply with related regulatory establishment: ANSI, NFPA, NEMA and UL.	
5.2.3 Plumbing		Fully in compliance	All installation plumbing will comply with NAPHCC/ASPE - and NSP Code.	

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
5.2.4 Concrete		Fully in compliance	If applicable	
5.2.5 Trades		Fully in compliance	Yes	
5.2.7 Utilities	The contractor will be responsible for all test stand utilities connection.	Fully in compliance	HII will install the Test Stand	
5.2.8 Protection		Fully in compliance	All practical methods and good commercial practices will be applied to protect other equipment during the Installation.	
6.0 Documentation	The contractor provide documentations with the Test Stand	Fully in compliance	HII will provide all required documents as required in the specification with the delivery of the Test Stand. Four sets of copies in CD-ROM format. As a minimum these document will be: Operator and Maintenance Manual, Calibration procedure and Spare Parts Lists.	Section V

SPECIFICATION PARA. NO.	SPEC. REQUIREMENT	HII TEST STAND COMPLI-ANCE	HII TEST STAND SUPPORTIVE EVIDENCE	REFERENCE TO HII PROPOSAL PARA NO
7.0 Training	The contractor shall provide 3 days total of training for the operation, maintenance and calibration. 10 Gov personnel.	Fully in compliance	Upon installation, calibration and performance testing HII will conduct a 3-day training session.	Section VI
8.0 Warranty	To be covered by the contractor and respond to warranty service within 48 hours.	Fully in compliance	**HII provides Two (2) year Warranty.** HII will respond to warranty service in less than 48 hours.	Section VIII

TECHNICAL PROPOSAL
FOR
UNIVERSAL HYDRAULIC TEST STAND

INTRODUCTION:

HII, a long recognized leader in the field of hydraulic, electrohydraulic, hydropneumatic, electrical, fuel and air conditioner systems, has produced very similar equipment in the past for United States military services and for commercial market. We are confident that this procurement represents a one-for-one match of our corporate capabilities and experience. The ongoing research and modernization have improved designs in the area of Hydraulic Test Stand, Ground Support Equipment, Components and Automation have enabled HII manufacturing techniques to be centered around the modular concept of system construction. This has substantially increased the reliability, maintainability, supportability and quality of the equipment required in modern aerospace/naval programs.

With all the recent additional knowledge and experience gained through the design and development of manual and automated test stands, we are confident of procuring "Universal Hydraulic Test Stand" for testing hydraulic components with hydraulic oil per MIL-PRF-46170C utilizing the latest manufacturing techniques.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

1.1 SCOPE:

This proposal contains technical description for the "Universal Hydraulic Test Stand", HII Model HIS-300 SP manufactured by Hydraulics International, Inc. (HII) at its Chatsworth facility in California, USA.

1.2 PURPOSE:

The test stand provides the required flow and pressure of hydraulic fluid for accurately and rapidly testing the performance and operating characteristics of non-rotating and rotating hydraulic accessories which have been identified in the Anniston Army Depot solicitation.

Sections II and III describe each module in detail.

The Test Stand is designed for manual operation, compatible with MIL-PRF-46170 C hydraulic fluid and operational with the facility voltage of 230 VAV and 460 VAC, 3P/60Hz.

1.3 DESCRIPTION:

The HII proposed Test Stand Model HIS-300 SP for the "Universal Hydraulic Test Stand" consists of two (2) individual modules: The Hydraulic Power Supply, and the Main Test Stand.

The Hydraulic Power Supply module houses Hydraulic Pumps, Electrical Motors, Reservoir and some of the related hydraulic filter assemblies.

This module can be located out side of the shop facility which reduces the noise and increase working space for operator(s) in the shop area.

The Main Test Stand houses Dynamometer (Drives and high speed Motor), DC power supply, controls and the instrumentations. The Main Stand provides full operational capability to the operator to perform the tests.

Two manually adjustable Fluid Temperature Control circuits are provided to maintain fluid temperature to a desired value. One circuit is for the closed loop Test Pump circuit located in the Main Test Stand. The other is located in the Hydraulic Power Supply to control the fluid temperature for the entire test stand and all testing. Each circuit is comprised of an oil/water heat exchanger, an electrically controlled ball valve, which regulates the amount of water flow to the heat exchanger. The power pack The Fluid Temperature circuits also include an immersion heater in the reservoir. The heater in conjunction with the heat exchangers maintain the fluid temperature in the range of 70

to 200°F. The operator can set the temperature to a desired value on the control panel of the Test Stand via digital temperature controllers.

HII also proposes a "Closed Loop Cooling System" as an option. Please refer to the Section IX for details.

1.4 LEADING PARTICULARS

FLOW AND PRESSURE RANGE:	60 GPM at 3000 PSI Reduced flow at 5000 PSI.
TEST FLUID:	MIL-PRF-46170C
MAIN PUMP:	Variable displacement, pressure compensated, Axial piston. 65 GPM at 3000 PSI, Reduced flow at 5000 PSI.
MAIN PUMP MOTOR:	125 HP, 1800 RPM, "C" Face, ODP, 230/460 VAC, 3 Phase, 60 HZ.
AUXILIARY PUMP:	Variable displacement, pressure compensated, Axial piston 10 GPM at 5000 PSI.
AUXILIARY PUMP MOTOR:	30 HP, 1800 RPM, "C" Face, ODP, 230/460 VAC, 3 Phase, 60 HZ.
SUPERCHARGE PUMP:	60 GPM ,100 PSI
SUPERCHARGE PUMP MOTOR:	5 HP, 1800 RPM, "C" Face, 230/460 VAC, 3 Phase, 60 HZ.
AIR OPERATED STATIC PUMP:	0-10,000 PSI.
RESERVOIR CAPACITY:	75 Gallons.
FILTER ASSY, MAIN PUMP:	60 GPM, 3 Micron Absolute Filtration with Diff. Press. Switch.
FILTER ASSY, AUX. PUMP:	10 GPM, 3 Micron Absolute Filtration with Diff. Press. Switch.
FILTER ASSY, RETURN CIRCUIT:	60 GPM, 10 Micron Absolute Filtration with Diff. Press. Switch.
FILTER ASSY, TEST PUMP INLET:	60 GPM, 10 Micron Absolute Filtration with Diff . Press. Switch.
FILTER ASSY, TEST PUMP OUTLET CIRCUIT:	60 GPM, 10 Micron Absolute. Filtration with Diff. Press. Switch.

FILTER ASSY, TEST PUMP/MOTOR CASE DRAIN CIRCUIT:	60 GPM, 10 Micron Absolute Filtration with Diff. Press. Switch.
FLOWMETERS:	Turbine flowmeters with digital indicators ± 0.5% full scale.
HYDRAULIC POWER SUPPLY HEAT EXCHANGER:	Brazed plate type, 60 GPM hydraulic fluid maintained at 100 ± 5°F. Water Side: 15 GPM at 70°F.
TEST PUMP CIRCUIT HEAT EXCHANGER:	Brazed plate type, 60 GPM Hydraulic maintained at 100 ± 5°F. Water Side: 15 GPM at 70°F.
DC POWER SUPPLY:	0-30 VDC, up to 62 AMP. Adjustable Controls /panel mounted breaker switch with digital volt and amp meters.
TIMER:	Digital, LCD, 1 7/8 in high Readouts, Audible Alarm.
VARIABLE SPEED DRIVE/MOTOR*:	81 HP electric motor, 5000 RPM, 236 foot pounds at 1800 RPM.

VARIABLE SPEED DRIVE/MOTOR - "DYNAMOMETER":

* Performance characteristics of the

- **Reversible**. Clockwise and counter clockwise.
- **Acceleration**: Accelerate/decelerate to and form 5000 RPM with unloaded shaft in less than 3 sec.
- **Speed regulation** less than .1% of base speed.
- **Maximum transient** upon load change 3% of the set speed, with recovery less than 1 sec.
- **Regenerative Variable Frequency Drives**: Full line-regenerative when testing hydraulic motors. This feature allows the voltage and current produced by the electric motor to be diverted to the facility power lines.
- **Torque Transducer** with digital torque indication with an accuracy of ± 0.5% full scale.
- Digital RPM indication.
- Oil-air lubrication.
- Water cooled.

1-5. OVERALL DIMENSIONS:

Hydraulic Power Supply

Height:	56 (inches)
Width:	66 (inches)
Depth:	66 (inches)

Main Test Stand

Height:	72 (inches)
Width:	144 (inches)
Depth:	84 (inches)

1-6. FACILITY REQUIREMENTS:

Test Fluid:	MIL-PRF-46170C
Hydraulic Power Supply:	460 VAC, 60 Hz. 3 Phase, 200 Amps
Pump Motor Test Stand:	460 VAC, 60 Hz, 3 Phase, 150 Amps
Hydraulic Power Supply Cooling Water:	15 GPM at 70°F
Pump/Motor Test Stand Cooling Water:	15 GPM at 70°F
Air:	Dry Shop Air, 100-150 PSI

SECTION II

HYDRAULIC POWER SUPPLY

2.1 DESCRIPTION:

The hydraulic power supply system delivers flow and pressure to the main test stand for testing rotary and non rotary hydraulic components. This power supply module can be remotely installed out side (or in a sound poof location) away from the main test area.

2.2 STRUCTURE:

Stainless steel/steel structure with forklift pockets to permit standard lift truck for positioning or moving purposes. It is constructed and treated to resist to the climate and the environment conditions. The structure is designed to provide adequate ventilation and climatic protection for the component housed within. Also included is a drip pan for environmental safety in case of an accidental fluid spill. The drip pan has the capacity to collect the entire reservoir volume including fluid in the plumbing. It is easy to access and empty out.
Overall Dimension: refer to 1-5.

2.3 RESERVOIR:

Stainless steel reservoir, 75 gallon capacity with reservoir level gauge, reservoir drain valve, fill port, fluid over temperature switch, baffles, pump suction strainers, pump suction shutoff valves, heater and clean out access with covers.

2.4 ELECTRIC MOTOR, MAIN PUMP:

125 HP, 1800 RPM.

2-5. ELECTRIC MOTOR, AUXILIARY PUMP:

30 HP, 1800 RPM.

2.6 SOFT START MOTOR CONTACTORS:

This feature reduces the current in rush when motors are initially started. These contactors and various electrical components are mounted inside a stainless steel NEMA 4 (water proof) enclosure.

2.7 MAIN PUMP: VARIABLE DISPLACEMENT, PRESSURE COMPENSATED:

Axial piston, remotely controlled from the main test stand. 60 GPM at 3000 PSI.

2.8 AUXILIARY PUMP: VARIABLE DISPLACEMENT, PRESSURE COMPENSATED.

Axial piston, remotely controlled from the main test stand, 10 GPM at 5000 PSI. It supplies flow and pressure for testing components that require more than one supply pressure and flow.

2.9 MAIN PUMP SUPPLY FILTER:

60 GPM, 6000 PSI, 3 MICRON ABSOLUTE. Equipped with a differential pressure switch which illuminates a warning light on the main test stand control panel, indicating filter needs service.

2.10 AUXILIARY PUMP SUPPLY FILTER:

10 GPM, 6000 PSI, 3 MICRON ABSOLUTE. Equipped with a differential pressure switch which illuminates a warning light on the main test stand control panel, indicating filter needs service.

2.11 RETURN FILTER:

600 PSI, 10 MICRON. Equipped with a differential pressure switch which illuminates a warning light on the main test stand control panel, indicating filter needs service.

2.12 FLUID TEMPERATURE CONTROL:

The circuit incorporates an oil/water heat exchanger, an electrically controlled ball valve which regulates the amount of water flow to the heat exchanger, a heater and an electronic temperature controller which is mounted on the main test stand control panel. The operator can set the temperature between 70° to 200°F.

SECTION III
MAIN TEST STAND

3.1 DESCRIPTION:

The test stand provides the required flow and pressure of hydraulic fluid for accurately and rapidly testing the performance and operating characteristics of non rotating hydraulic accessories such as: valves, hoses, actuating cylinders, accumulators, pressure regulators and similar hydraulic components. It also provides all the necessary hydraulic and electrical circuits to test performance and operating characteristics of rotating equipment such as: hydraulic pumps, hydraulic motors and hydraulic power pack assemblies.

3.2 STRUCTURE:

The test stand structure (cabinet) is constructed of formed steel sections welded onto a channel base with forklift pocket to permit standard lift truck for positioning or moving purposes. All assemblies and components (except Hydraulic Power Supply) are housed within the structure. Doors and panels in front and back of the structure permit easy access to the interior for inspection and servicing. The front of the test stand contains the operating controls/valves and indicators mounted on a vertical and an inclined control panel. The cabinet is designed and constructed to absorb the component vibration within and to avoid interfering with the instrumentations readability and accuracy. A toe clearance of 6 inches or more is provided for the operator's comfort and safety position. The cabinet is primed with epoxy polymide primer per MIL-P-23377 Type I, Class II and painted with polyurethane per MIL-CL85285 Type II. Color is per FED. STD 595 SIMI GLOSS Gray No. 26373.

3.2.1 Size: refer to Para 1.5 (width: 144", height: 72", depth: 84").

3.2.2 Workbench: The test workbench surface is a horizontal perforated stainless steel sheet and sink. It allows access to hoist loading/unloading of heavy components. A writing surface is also provided at the front of the test stand along with a storage compartment for the Technical Manual within the reach of the operator.

3.2.3 Sink Drain: The sink drain is connected to the reservoir via a strainer.

3.2.4 Safety Shield: A shield made of Lexan or equivalent is provided over entire workbench area to protect from any accidental hydraulic oil spills.

3.2.5 Accessibility: The test stand is designed ergonomically to provide the operator easy access to all components for operation, calibration and maintenance. Lights are provided within the structure to assist the operator during the maintenance.

3.2.6 Drip Pan: Located at the bottom of the cabinet and provides fluid containment in case of any accidental fluid spill. The drip pan has the capability to collect the entire volume of the Test Stand and components.

3.2.7 Panel Holes: All holes for valves and fittings are standard size to permit replacement without rework.

3.3 ACTUATOR TEST CIRCUIT:

This circuit consists of a four way-3 position selector valve and a shutoff valve which shuts off flow and pressure to the selector valve.

3.4 SUPPLY PORTS:

Five dynamic, one and hydrostatic supply ports are incorporated in the test stand. These ports are located in the work (sink) area and are mounted away from the operator for safety. These supply ports are as follows:

- Supply port (P1), 5000 PSI and 60 GPM.
- Supply port (P2), 5000 PSI and 60 GPM.
- Supply port (P3), 5000 PSI and 10 GPM.
- Supply port (P4), hydrostatic supply port 0-10,000 PSI.
- Two supply ports (CYL 1) and (CYL 2), for actuator test circuit (Para 3.3).

3.5 RETURN PORTS:

Four return ports are incorporated in the test stand. These ports are located in the work (sink) area. These return ports are as follows:

- Return port (R1) with shutoff valve and 0-70 GPM glass-tube flow meter.
- Return port (R2) with shutoff valve and 0-32 GPM glass-tube flowmeter.
- Return port (R3) with shutoff valve and 0-5 GPM glass-tube flowmeter.
- Return port (R4) with shutoff valve and 0-15 GPM glass-tube flowmeter.

3.6 HYDROSTATIC PRESSURE CIRCUIT:

This circuit is used for static and leakage test of components at pressures up to 10,000 PSI. The circuit includes an air operated pump, supply bypass valve, supply port (P4) shutoff and circuit fill valve.

3.7 SUPERCHARGE PUMP:

60 GPM and 100 PSI. It supplies Flow and Pressure to the Test Pump inlet.

3.8 PRESSURE GAUGES:

Analog, 6" dial, ± 0.5% full scale accuracy. 7 gauges provided in test stand are as follows:

- System pressure, 0-6000 PSI.
- Auxiliary pressure, 0-6000 PSI.
- Hydrostatic pressure, 0-15,000 PSI.
- Auxiliary gauge, 0-6000 PSI.
- Auxiliary gauge, 0-1000 PSI.

- Auxiliary gauge, 0-30 PSI.

3.9 FLOWMETERS:

Glass-tube flowmeters ± 0.5% accuracy of reading. Four flowmeters provided in the test stand are as follows:

- Return port (R1), 0-70 GPM.
- Return port (R2), 0-32 GPM.
- Return port (R3), 0-5 GPM.
- Return port (R4) 0-15 GPM "Aux pump".

3.10 TEST PUMP / MOTOR CIRCUITS:

3.10.1 Test Pump Circuit: This circuit consists of pump inlet filter, inlet temperature gauge, inlet pressure gauge, inlet pressure control, pump outlet filter, outlet temperature gauge, outlet pressure gauge, outlet pressure controls and outlet turbine flowmeter. This circuit also allows the test pump to be cycled in manual or automatic mode via the cycle counter and cycling interval timers on the control panel. An alternate option would be a closed loop test pump circuit in lieu of open loop. The alternate option advantage would require a pump to replenish the fluid lost through the test-pump (UUT) case drain. It also provides a better temperature regulation of the test pump inlet fluid. This circuit is shown in the hydraulic schematic.

The circuit incorporates an oil/water heat exchanger, an electrically controlled ball valve which regulates the amount of water flow to the heat exchanger and an electronic temperature controller which is mounted on the main test stand control panel. The operator can set the temperature between 70° to 200°F.

3.10.2 Test Motor Circuit: This circuit consists of manual 4 way-3 position selector valve which controls the rotation of the test motor. Flow and pressure to the test motor is supplied from Hydraulic Power Supply and controlled from the Main Test Stand's control panel.

3.10.3 Test Pump/Motor Case Drain: This circuit consists of case drain outlet temperature gauge, outlet pressure gauge, outlet pressure control, outlet filter and outlet turbine flowmeter. Also provided are panel mounted ports for case drain patch testing.

3.10.4 Pressure Gauges: Analog, 6" dial, ± 0.5% full scale accuracy. Three gauges provided in test stand are as follows:

- Test pump inlet pressure, 0-300 PSI.
- Test pump outlet pressure, 0-6000 PSI.
- Test pump/motor case drain pressure, 0-300 PSI.

3.10.5 Flowmeters. Turbine flowmeters with digital indicators, ± 0.5% full scale. Two flowmeters provide in the test stand are as follows:

- Test pump outlet flow, 0-60 GPM.
- Test pump/motor case flow, 0-10 GPM.

3.10.6 Temperature Gauges: 2 ½" dial ± 2% accuracy.

3.10.7 DC Power Supply: 0-30 VDC, 0-65 Amp with digital volt and Amp meters.

3.10.8 Test Pump Outlet Filter: 60 GPM, 10 Micron Absolute Filtration with differential pressure switch which illuminates a warning light on the control panel indicating filter replacement.

3.10.9 Test Pump/Motor Case Drain Filter: 10 GPM, 10 Micron Absolute Filtration with differential pressure switch which illuminates a warning light on the control panel indicating filter replacement.

3.10.10 Test Pump Inlet Filter: 60 GPM, 10 Micron Absolute Filtration with differential pressure switch which illuminates a warning light on the control panel indicating filter replacement.

3.10.11 Variable Speed Drive/Motor "Dynamometer"*: 81 HP Electric Motor, 5000 RPM, 236 foot pounds at 1800 RPM.

* Performance characteristics:

- **Reversible.** Clockwise and counter clockwise
- **Acceleration**: Accelerate/decelerate to and form 5000 RPM with unloaded shaft in less than 3 sec.
- **Speed regulation** less than .1% of base speed.
- **Maximum transient** upon load change 3% of the set speed, with recovery less than 1 sec.
- **Regenerative Variable Frequency Drives**: Full line-regenerative when testing hydraulic motors. This feature allows the voltage and current produced by the electric motor to be diverted to the facility power lines.
- **Torque Transducer** with digital torque indication with an accuracy of ± 0.5% full scale.
- **Digital RPM indication**.
- **Oil-air lubrication.**

SECTION IV

DRAWINGS
ELECTRICAL AND HYDRAULIC SCHEMATICS

4.1 HYDRAULIC SCHEMATIC & PARTS LISTS.

Please see attached.

4.2 ELECTRICAL SCHEMATIC & PARTS LISTS.

Please see attached.

DWG. NO. SRP E41215-200 | SH 1 | REV.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

PG 41 ▲ 0-30 PSI — NV 6B ▲
PG 42 ▲ 0-1000 PSI — NV 6C ▲
PG 43 ▲ 0-6000 PSI — NV 6D ▲

AUX. GAGES

30 31 32 ΔP F1

H_2O OUT — −20−0−200°F 65 ▲ — HX1 5 — BV1 9 — H_2O IN

ST1 22 — TCV1 4 (M)

HA 61 — CV2 53

RV1 15

3 — 75GAL 1 — HTR 72 — LI 2 — −20−0−200°F TG 65A ▲ — LS1 39

ST2 24 — ST3 23 — ST4 25 — 8 — BV6

OPTIONAL WATER REMOVAL CIRCUIT

BV2 10 — BV3 10A — BV4 12 — BV5 10B

HA 59 — PC — VC — MP 27 — CV1 52 — HA 60 — ΔP F2 — 33 34 35

PG 43A ▲ 0-6000 PSI — NV 6 ▲

TG 65B ▲ −20−0−200°F

CYL1 CYL2 — SLV1 50 — SV 7

CV4 54 — 0-70 GPM / 0-32 GPM / 0-5 GPM — FM 46 ▲ — SV 7D ▲ R1 — SV 7E ▲ R2 — SV 7F ▲ R3

CV5 55 — 0-15 GPM — FM 67 ▲ — SV 7G ▲ R4

SV 7A — SV 7B — SV 7C — P1 — P2

RV2 15A

HA 64 — CV6 55 — PC — VC — AP 71 — CV3 51 — HA 62 — HA 63 — ΔP F3 — 65 66 67

PG 43B ▲ 0-6000 PSI — NV 6A ▲

TG 65C −20−0−200°F

SV 7H ▲ — SV 7J ▲ — P3

SV 14 ▲ — SV 14B ▲ — PG 44 ▲ 0-15,000 PSI — P4

SV 14A ▲

PG 49 ▲ 0-150 PSI — BV6 11 — SHOP AIR 150 PSI MAX.

WSF 26 — PRV1 20 ▲ — HSP 28

ST5 21 — SINK DRAIN — E

HA 69 — CP 29 — HA 70 — ΔP F3 — 36 37 38 — C

LEGEND

ACC	ACCUMULATOR
AP	AUX. PUMP
BV	BALL VALVE
CP	CHARGE PUMP
CV	CHECK VALVE
F	FILTER
FM	FLOWMETER
FS	FLOWSWITCH
HA	HOSE ASSY
HSP	HYDROSTATIC PUMP
HTR	HEATER
HX	HEAT EXCHANGER
LI	LEVEL INDICATOR
LS	LEVEL SWITCH
MP	MAIN PUMP
NV	NEEDLE VALVE
PC	PRESS. COMPENSATOR
PG	PRESS. GAGE
PRV	PRESS. REDUCING VALVE
PST	PURGE SIGHT TUBE
RV	RELIEF VALVE
SLV	SELECTOR VALVE
SOL	SOLENOID VALVE
ST	STRAINER
SV	SHUTOFF VALVE
TCV	TEMPERATURE CONTROL VALVE
TG	TEMPERATURE GAGE
UUT	UNIT UNDER TEST
VC	VOLUME CONTROL
VV	VENT VALVE
WSF	WATER SEPERATOR/FILTER
ΔP	DIFF. PRESS. SWITCH

NOTE:

▲ PANEL MOUNTED ITEM.

QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE: FRACTION ±1/16, DECIMALS .XX ±.03 .XXX ±.010, ANGLES ±2°

FINISH:

DO NOT SCALE DWG.

HYDRAULICS INTERNATIONAL, INC. CHATSWORTH, CALIFORNIA

HYDRAULIC SCHEMATIC

APPROVALS	DATE
DRAWN M.G	01-05
CHECKED	
ISSUED	
ENGR.	

SIZE D | FSCM No. 56529 | DWG. No. SRP E41215-200 | REV.

SCALE / | WT. | SHEET 1 OF 2

NEXT ASSY	USED ON
APPLICATIONS	

DWG. NO. SRP E41215-200 | SH 2 | REV.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

RV5 17A 0-400 PSI
RV6 18A 0-120PSI
RV3 17
RV4 18
CV8 56
SV 7K
SV 7L
ΔP F5 36A 37A 38A
FM 47
TG 65D -20-0-200°F
PG 45 0-300 PSI
NV 6E
PATCH TEST FILTER PORTS
NV 6F
CASE DRAIN
H_2O IN F
H_2O OUT G
MOTOR CONTR.
REGEN. MODULE
AIR
BV8 13
FS1 68
CV7 55A
TG 65E -20-0-200°F
PG 45A 0-300 PSI
NV 6G
P5 INLET
UUT TEST PUMP
UUT TEST MOTOR
RPM
TORQUE
DRIVE MOTOR
LUBE UNIT
CV9 54A
OUTLET
M1
M2
SLV2 50A
BV8 9A
ST6 22A
TCV2 4A
H_2O IN
H_2O OUT
HX2 5A
F
G
PST 58
VV 57
RV7 16 0-3000 PSI
SOL1 66
RV8 19 0-5000 PSI
TG 65F -20-0-200°F
PG 43C 0-6000 PSI
PRECHARGE 1500 PSI
ACC 40
SV 7N
NV 6H
SV 7M
SV 7P
ΔP F6 30A 31A 32A
FM 48
SINK DRAIN

QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE
FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

HYDRAULICS INTERNATIONAL, INC.
CHATSWORTH, CALIFORNIA

APPROVALS	DATE
DRAWN M.G	01-05
CHECKED	
ISSUED	
ENGR.	

HYDRAULIC SCHEMATIC

NEXT ASSY	USED ON
APPLICATIONS	

FINISH:
DO NOT SCALE DWG.

SIZE D | FSCM No. 56529 | DWG. No. SRP E41215-200 | REV.
SCALE / | WT. | SHEET 2 OF 2

PART LIST
HYDRAULIC SCHEMATIC,DWG NO. SRPE41215-200

ITEM NO.	*DESCRIPTION*	*QTY*
1	RESERVOIR	1
2	LEVEL INDICATOR 12”	1
3	FILL CAP AND STRAINER	1
4,4A	TEMERATURE CONTROL VALVE	2
5,5A	HEAT EXCHANGER	1
6 thru 6H	NEEDLE VALVE	9
7 thru 7P	SHUTOFF VALVE	15
7.1	FLANGE	30
8	BALL VALVE 2”	1
9,9A	BALL VALVE 1¼”	2
10 thru 10B	BALL VALVE 1”	3
11	BALL VALVE ¾”	1
12	BALL VALVE ½”	1
13	BALL VALVE ¼”	1
14, 14A, 14B	HIGH PRESSURE SHUT OFF VALVE	3
15,15A	RELIEF VALVE (RV1-RV2)	2
16	RELIEF VALVE (RV7)	1
17,17A	RELIEF VALVE (RV3-RV5)	2
18,18A	RELIEF VALVE (RV4-RV6)	2
19	REIEF VALVE (RV8)	1
20	AIR REGULATOR (PRV1)	1
21	STRAINER “Y”, ¾”	1
22,22A	STRAINER “Y” 1,1/4	2
23	STRAINER (INSIDE TANK)1”	1
24	STRAINER (INSIDE TANK) ½”	1
25	STRAINER (INSIDE TANK) 2”	1
26	WATER SEPARATOR/ FILTER	1
27	PUMP, VARIABLE DISPLACEMENT, PRESSURE COMPENSATOR. AXILE PISTON	1
27.1	PUMP MOTOR ADAPTER	1
27.2	COUPLING	1
27.3	COUPLING	1
27.4	INSERT	1
28	AIR DRIVEN PUMP (5L-SD-230-DE)	1
29	SUPERCHARGE PUMP	1
30, 30A	FILTER ASSY LP 12 MIC DUAL ELEM.	2
31, 31A	FILTER ELEMENT 12 MIC	4
32, 32A	DIFERENTIAL PRESSURE SWITCH	2
33	FILTER ASSY 3 MIC. HP	1
34	FILTER ELEMENT	1
35	DIFERENTIALPRESSURE SWITCH	1

PART LIST
HYDRAULIC SCHEMATIC,DWG NO. SRPE41215-200

ITEM NO.	*DESCRIPTION*	*QTY*
36, 36A	FILTER ASSY	1
37, 37A	FILTER ELEMENT	1
38, 38A	DIFERENTIALPRESSURE SWITCH	1
39	LEVEL SWITCH	1
40	ACCUMULATOR, 5000PSI, 10 CU/in PISTON TYPE	1
41	PRESSURE GAUGE (0-30 PSI) 6” DIAL, 1/4NPT	1
42	PRESSURE GAUGE (0-1000 PSI) 6” DIAL, 1/4NPT	1
43 thru 43C	PRESSURE GAUGE (0-6000PSI) 6” DIAL, 37° MALE	4
44	PRESSURE GAUGE (0-15000 PSI) 6” DIAL, 1/4NPT	1
45, 45A	PRESSURE GAUGE (0-300 PSI) 6” DIAL, 1/4NPT	2
46	FLOW METER BANK ASSY. 3 STAGES, .5-5 GPM, 3-30 GPM, 6-70 GPM, 600mm SCALE	1
47	FLOW METER TURBINE .1-10 GPM, --8MALE 37°	1
48	FLOW METER TURBINE .1-60 GPM, -20 MALE 37°	1
49	PRESSURE GAUGE 0-160 PSI	1
50, 50A	SELECTOR VALVE	2
51	CHECK VALVE (CV3)	1
52	CHECK VALVE (CV1)	1
53	CHECK VALVE (CV2)	1
54, 54A	CHECK VALVE (CV4-CV9)	2
55, 55A	CHECK VALVE (CV6-CV7)	1
56	CHECK VALVE (CV8)	1
57	VENT VALVE	1
58	PURGE SIGHT TUBE	1
59	HOSE ASSY. SUCTION (MP)	1
60	HOSE ASSY HIGH PRESSURE (MP)	1
61	HOSE ASSY. CASE DRAIN (MP)	1
62	HOSE ASSY SUCTION (AP)	1
63	HOSE ASSY H.P (AP)	1
64	HOSE ASSY. CASE DRAIN (AP)	1
65 thru 65F	TEMPERATURE GAUGE	7
66	SOLENOID VALVE	1
66.1	COIL	1
66.2	BODY	1
67	FLOW METER	1
68	FLOW SWITCH	1
69	HOSE ASSY SUCTION (CP)	1
70	HOSE ASSY. HP (CP)	1
71	PUMP, VARIABLE VOLUME, PRESSURE COMPENSATED, 5000PSI, 10GPM	1
72	HEATER	1

DWG. NO. SRP E41215-300 | SH 1 | REV.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CB2 200 AMP

2 3 4
5 6 7

L1
L2
L3
G

230/460 VAC
3ø, 60 HZ

CB1
2.2-4 AMP
SET @ 3 AMP
1

L1 L2 L3
LL1 LL2 LL3

L1 L2 L3
24VDC,20A
PS1

1L1
1L2
1L3

A
B
C

CB3
2.2-4 AMP
SET @ 3 AMP
1A

2L1 2L2 2L3

L1 L2 L3
24VDC,20A
PS2

PS2
24 VDC
+V

PS2
24 VDC
COM

POWER SUPPLY 8

MAIN VSD INTERFACE CONN.

9
9A

PB1 ▲ E-STOP
PB2 ▲ E-STOP

VSD E STOP

J1 10 ▲
11

TIME RELAY 12

CONTACTOR 13

POWER SWITCH 14

VSD CONTROL

CB2
CR1
A1+ TR1 A2-
SW1
CR1
15 18
25 28
TR1

J1

CR1
CR3
LS1
CR2
CR2
PB3
PB4 ▲
CR2
1M
HM

POWER SUPPLY 8A

POWER ON INDICATOR 15

LEVEL SWITCH 16

CONTROL RELAY 17 18

RESERVOIR LOW LEVEL INDICATOR 19

START 20
SOFT START ⚠1 22
STOP 21
MAIN PUMP

IM
P

HOURMETER 23

FLOW CONTROL SOLENOID

PRESSURE CONTROL SOLENOID

AMP1

LVDT 1
WHT
RED
GRN
BLK

POT. 1 24
VOLUME 25

PQ MODULE 26

POT. 2 24A

PRESSURE 25A

24 VDC +V

24 VDC COM

PB5 ▲
PB6 ▲
2M
CR2

START 20A
CONTACTOR 85
STOP 21A
AUX. PUMP

PB7 ▲
PB8 ▲
3M
CR2

START 20B
CONTACTOR 13A
STOP 21B
CHARGE PUMP

L3 ▲ △P1 DP SWITCH 29
INDICATOR 19A
SUPPLY FILTER

L4 ▲ △P2 DP SWITCH 30
INDICATOR 19B
RETURN FILTER

L5 ▲ △P3 DP SWITCH 30A
INDICATOR 19C
AUX. PUMP FILTER

L6 ▲ △P4 DP SWITCH 29A
INDICATOR 19D
CHARGE PUMP FILTER

L7 ▲ TEST PUMP FILTER INDICATOR 19E

L8 ▲ UUT CASE DRAIN FILTER INDICATOR 19F

L9 ▲ CHILLED WATER LOW FLOW INDICATOR 19G

J1

NOTE:

▲ PANEL MOUNTED ITEMS.

⚠1 SOFT STARTER SETTINGS

T1 = %5
T2 = %30
t_K = 0SEC
t_r = 9SEC
t_s = 0SEC
FLA = C
TRIP CLASS = 20

QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

CONTRACT No.

HYDRAULICS INTERNATIONAL, INC.
CHATSWORTH, CALIFORNIA

APPROVALS	DATE
DRAWN M.G	01-05
CHECKED	
ISSUED	
ENGR.	

FINISH:

ELECTRICAL SCHEMATIC

SIZE	FSCM No.	DWG. No.	REV.
D	56529	SRP E41215-300	

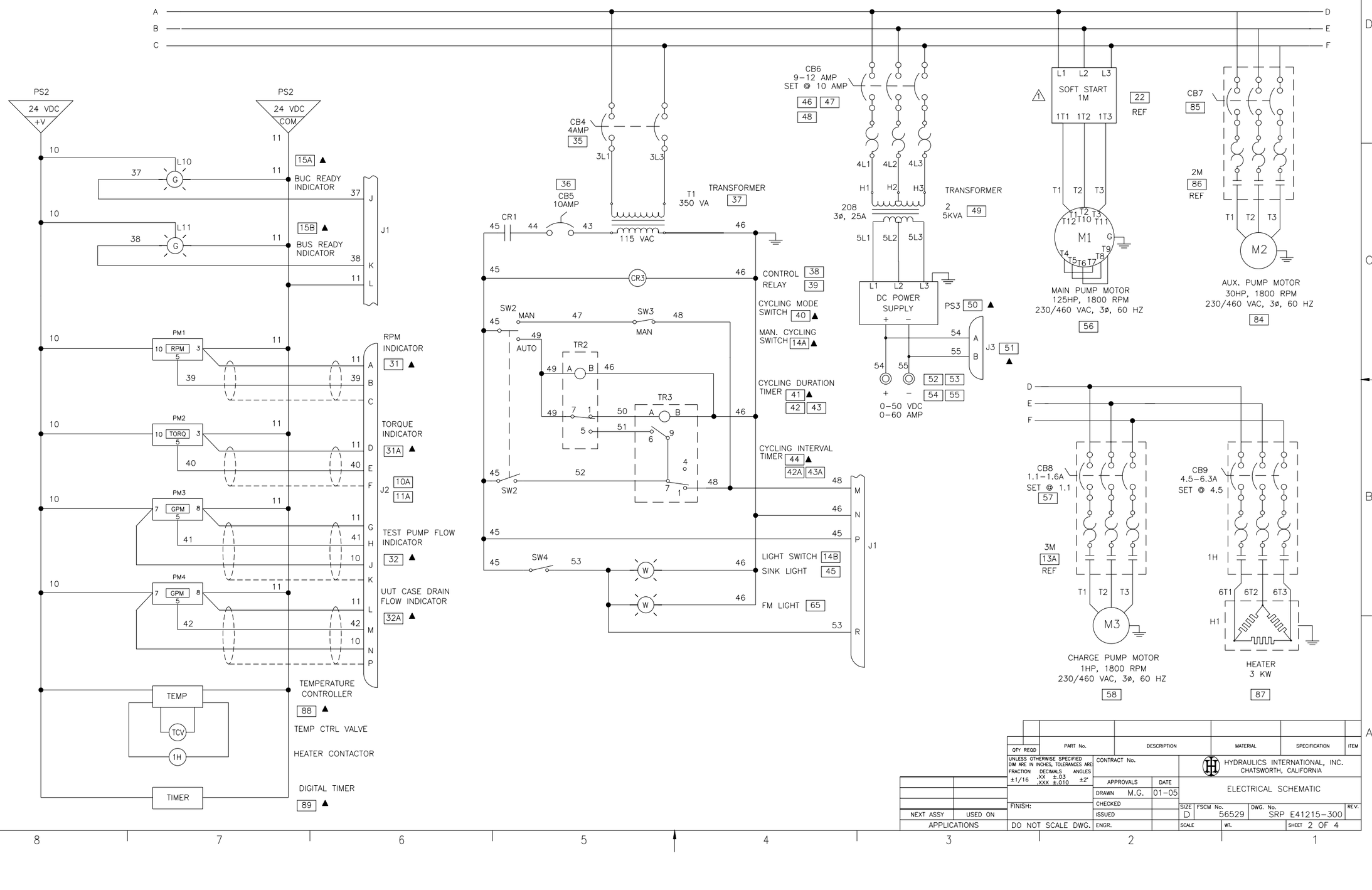
SCALE | WT. | SHEET 1 OF 4

NEXT ASSY | USED ON

APPLICATIONS

DO NOT SCALE DWG.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE:
FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

FINISH:

DO NOT SCALE DWG.

CONTRACT No.

HYDRAULICS INTERNATIONAL, INC.
CHATSWORTH, CALIFORNIA

APPROVALS	DATE
DRAWN M.G.	01-05
CHECKED	
ISSUED	
ENGR.	

ELECTRICAL SCHEMATIC

SIZE	FSCM No.	DWG. No.	REV.
D	56529	SRP E41215-300	

SCALE | WT. | SHEET 2 OF 4

NEXT ASSY	USED ON
APPLICATIONS	

DWG. NO. SRP E41215-300 | SH 3 | REV.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

TEST STAND TOP

230/460 VAC 3ø, 60 HZ — L1 L2 L3 G

CB10 150AMP — 2A 3A 4A / 5A 6A 61

CB11 100AMP — 67 / 68

LINE REACTOR 70 — 7L1 7L2 7L3 / 1 U 2, 1 V 2, 1 W 2 / 8L1 8L2 8L3

CB12 10 AMP 66

CB13 2 AMP 69

P1 60 — 59

PS1 VSD CONTROL 24 VDC, 20A

9B ▲

TEST PUMP FILTER DP SWITCH 30B

UUT CASE DRAIN FILTER DP SWITCH 30C

H_2O FLOW SWITCH 61

AIR PRESS. SWITCH 62

PB3 — E-STOP

RM1-2, RM1-1, RM1-1, RM1-2

ΔP5, ΔP6, FS1, PS1

PS2 24 VDC V+ / PS2 24 VDC COM

M3 LUBE CONTROLLER (FAULT) — 115VAC L — LUBE UNIT 85

RM2-4

TORQUE TRANSDUCER POWER SUPPLY PS4 — 15 VDC V+ / 15 VDC COM

115VAC N

SOL1 — TEST PUMP CYCLING SOLENOID 64

SINK LIGHT 45A

PURGE TUBE LIGHT 28

TO CPU DI TERMINAL 1.2

TO CPU DI TERMINAL 1.1

TO CPU DI TERMINAL 1.0

TO CPU DI TERMINAL 0.7

TO CPU 115VAC

POWER SUPPLY 63

X1 — 1 AMP — CHARGE CIRCUIT — CONTROL CIRCUIT

BUC (FEEDBACK) 71 — 1C1 1D1 — C1 D1 — 760VDC MAX

BUC READY TO OPERATE

LEFT SIDE: REAR, FRONT, V CNTRLR, X99A, X99B, BUS (BAUMULLER UNIT SERVO)

RIGHT SIDE: FRONT, REAR, BUC (BAUMULLER UNIT CONVERTER), X99A, X99AB, X1

80 HP, 5000 RPM TEST PAD MOTOR 74 — M3 — T1 T2 T3 GRND SH

ENCODER 73

X25 V CNTLR — 1U2 1V2 1W2 G SH

BUS (POWER MODULE) 72 — BBint +24V M24V — X99A

(4 RELAY MODULE) 75 — RM1 A1 A2

PS1 24 VDC V+ / PS1 24 VDC COM

P2 59A 60A — TEST PUMP OUTLET FLOW 76 (FM2) — TEST PUMP/MOTOR CASE DRAIN FLOW 77 (FM3)

P3 78 79 — 14C — SW5 — J4 51A ▲ — EDV POWER 0-50VDC

QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

FINISH:

DO NOT SCALE DWG.

NEXT ASSY | USED ON

APPLICATIONS

CONTRACT No.

APPROVALS	DATE
DRAWN M.G.	01-05
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ISSUED	
ENGR.	

HYDRAULICS INTERNATIONAL, INC. CHATSWORTH, CALIFORNIA

ELECTRICAL SCHEMATIC

SIZE D | FSCM No. 56529 | DWG. No. SRP E41215-300 | REV.

SCALE | WT. | SHEET 3 OF 4

DWG. NO. SRP E41215-300 | SH 4 | REV.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

FROM PS2 24 VDC +V 10

FROM PS2 24 VDC COM 11

FROM PS1 24 VDC +V 8

FROM PS1 24 VDC COM 2

RM2-1 11 12 PULSE ENABLE 64

RM2-2 21 24 SPEED/TORQUE 65

RM2-3 31 34 RAPID HALT 66

V CONTROLLER 81 X26

2

68

69 SPEED/TORQUE CONTROL

70 71 M3 TEST PAD MOTOR WINDING TEMP

72 73

TO CPU DI TERMINAL 0.6 BUS READY 67

LUBE UNIT FAULT INDICATOR 19H

L12

115 VAC 46 45

P1 J 37 K 38

RM2-1 RM2-2 RM2-3 RM2-4

1L 0.0 0.1 0.2 0.3 2L 0.4 0.5 3L 1.1 G N L1 A+ A- B+ B- M0 V0 M1 V1

DO

CPU 82

C+ C- D+ D- J J 83 84

DI 24VDC

1M 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 1.0 1.1 1.2 M L+ M L+ M0 V0 M L+

A1 RM2 A2 75A RELAY MODULE

14D SW6 ON OFF 81

14E SW7 SPEED(PUMP) TORQUE(MOTOR) 82

14F SW8 CCW CW 83

34 SW9 INC DEC 84 85

FROM FS1

FROM PS1

FROM LUBE UNIT TERINAL 12

FROM LUBE UNIT TERINAL 9

FROM V CONTROLLER TERINAL 13

TO V CONTROLLER TERINAL 4

TO V CONTROLLER TERINAL 3

FROM PS4

15 VDC V+ 59

15 VDC COM 60

TORQUE TRANSDUCER 33

60 GRN 1 0V

59 BRN 2 +15V

BLK 3 SHLD

YEL 4 SIG +/-10V

WHT 5 SIG 0V

GRY 6 CNTRL

NC

P2 A B C D E F

11 39 11 40

RIGHT SIDE

FRONT REAR

V CNTRLR X99A X99B

BUS

LEFT SIDE

REAR FRONT

BUC X99A X99AB X1

1 2

BBext_1 BBext_2

X99AB

BUC (FEEDBACK)

QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

FINISH:

DO NOT SCALE DWG.

CONTRACT No.

HYDRAULICS INTERNATIONAL, INC. CHATSWORTH, CALIFORNIA

APPROVALS	DATE
DRAWN M.G.	01-05
CHECKED	
ISSUED	
ENGR.	

ELECTRICAL SCHEMATIC

SIZE D | FSCM No. 56529 | DWG. No. SRP E41215-300 | REV.

SCALE | WT. | SHEET 4 OF 4

NEXT ASSY	USED ON
APPLICATIONS	

PART LIST
ELECTRICAL SCHEMATIC, DWG. NO. SRPE41215-300

ITEM NO.	*DESCRIPTION*	*QTY*
1	CIRCUIT BREAKER 2.2-4 AMP	2
2	CIRCUIT BREAKER FRAME 400 AMP	2
3	UNDER VOLTAGE RELAY 24VDC	2
4	OPERATOR MECHANISM	2
5	SHAFT	2
6	LUGS	12
7	TRIP RELAY 200 AMP	1
8	POWER SUPPLY, 3 PHASE, 480 VAC, 24 VDC, 20 AMP	2
9	EMERGENCY PUSH BUTTON	3
10	CONNECTOR	2
11	DUST CAP	2
12	TIMER RELAY, OFF DELAY, 24 VDC	1
13	CONTACTOR, 24 VDC	2
14	SWITCH, MAINTAINED, 2POSITION	7
15	LIGHT ASSY, GREEN, 24VDC	3
16	LEVEL SWITCH	1
17	CONTROL RELAY	1
18	RELAY SOCKET	1
19	LIGHT ASSY. RED	8
20	START, PUSHBUTTON	2
21	STOP, PUSHBUTTON	2
22	SOFT STARTER	1
22.1	LUG KIT	2
23	HOUR METER	1
24	POTENTIOMETER, 10KOHM, 10TURN	2
25	DIAL , MULTI TURN	2
26	AMPLIFIER	1
27	LUBRICATION UNIT	1
28	PURGE TUBE LIGHT	1
29	SWITCH, PRESSURE	1
30	SWITCH, PRESSURE	4
31	DIGITAL PANEL METER	2
32	DIGITAL PANEL METER	2
33	TORQUE TRANSDUCER	1
34	SWITCH, 3 POSITION SPRING, RETURN TO CENTER	1
35	CIRCUIT BREAKER, 2POLE, 4AMP	1
36	CIRCUIT BREAKER, 1POLE, 10AMP	1
37	TRANSFORMER, 480VAC-115VAC, 350VA	1

PART LIST
ELECTRICAL SCHEMATIC, DWG. NO. SRPE41215-300

ITEM NO.	*DESCRIPTION*	*QTY*
38	CONTROL RELAY	1
39	SOCKET RELAY	1
40	SWITCH, 3 POSITION, MAINTAINED	1
41	SOLID STATE COUNTER	1
42	BAZEL KIT	2
43	STRAIN RELIEF KIT	2
44	COUNTER RELAY	1
45	LIGHT ASSY. HOOD	2
46	CIRCUIT BREAKER	1
47	BUS BAR	1
48	LINE SIDE FEEDER	1
49	TRANSFORMER, 3 PHASE, 480 VAC-208 VAC, 5 KVA	1
50	POWER SUPPLY, 3 PHASE, 208 VAC, 0 TO 50 VDC	1
51	RECEPTACLE	2
52	JACK, RED	1
53	PLUG, RED	1
54	JACK, BLACK	1
55	PLUG, BLACK	1
56	ELECTRIC MOTOR, 125HP, 1800RPM, 460VAC, 3PHASE, 60HZ, “C” FACE, SHORT SHAFT, ODP	1
57	CIRCUIT BREAKER, 1.1-1.6 AMP	1
58	ELECTRIC MOTOR, 5HP, 1800RPM, 480VAC, 3PHASE, 60HZ	1
59	CONNECTOR	2
60	BACKSHELL	2
61	TRIP UNIT, 300AMP	1
62	FLOW SWITCH	1
63	POWER SUPPLY, 120VAC-15VDC	1
64	SOLENOID	
65	LIGHT ASSY.	1
66	CIRCUIT BREAKER, 3POLE, 10AMP	1
67	CONTACTOR, 24VDC	1
68	TERMINAL BLOCK	2
69	CIRCUIT BREAKER, 3POLE, 2AMP	1
70	LINE REACTOR	1
71	BUC UNIT	1
72	BUS UNIT	1
73	ENCODER	1
74	ELECTRIC MOTOR, 200HP, 15000RPM, 3PHASE	1
75	RELAY MODULE	2

PART LIST
ELECTRICAL SCHEMATIC, DWG. NO. SRPE41215-300

ITEM NO.	*DESCRIPTION*	*QTY*
76	TURBINE FLOW METER	1
77	TURBINE FLOW METER	1
78	CONNECTOR	1
79	BACK SHELL	1
80	V CONTROLLER	1
81	CPU MODULE	1
82	ANALOG MODULE	1
83	ANALOG MODULE	1
84	ELECTRIC MOTOR, 30 HP, 1800 RPM, 230/460, 60HZ, ODP	1
85	CIRCUIT BREAKER	1
86	CONTACTOR	1
87	HEATER	1
88	TEMP CONTROLLER	2
89	DIGITAL TIMER	1

SECTION V

DOCUMENTATION
FOR
UNIVERSAL HYDRAULIC TEST STAND

HII MODEL HIS-300 SP

Upon delivery of the Universal Hydraulic Test Stand, HII will provide four (4) copies of each following documents in electronic format (CD-ROM).

5.1 OPERATOR'S MANUAL:

Step-by-step operation with drawings and illustrations.

5.2 MAINTENANCE MANUAL:

Includes detail instructions for the maintenance of the Test Stand and the components.

5.3 CALIBRATION SPECIFICATION/PROCEDURE:

Step-by-step procedure with a list of special tools for calibration. HII will provide a Torque Transducer calibration along with the special fixtures to allow calibration on the Test Stand.

5.4 SPARE PARTS LISTS:

List of all spare parts along with part numbers, descriptions, required quantities, prices and estimated delivery time.

5.5 CATALOG:

Components data sheets.

SECTION VI

INSTALLATION AND TRAINING

6.1 INSTALLATION:

HII shall provide the following documents and services:

- Installation Plan and Drawings.
- Complete Installation of all modules of the Universal Test Stand to the Electrical disconnects.
- Start up Process.
- Assist Army personnel in Calibration.
- Performance verification including testing each of the GFE components listed in the Para 9.0 of the specification.

6.2 TRAINING:

Following the Installation HII shall provide the followings:

- Training Manual.
  - Operation
  - Maintenance
  - Calibration
- 3-day Training for maximum of 10 Government personnel.

SECTION VII

PACKAGING AND DELIVERY

7.1 PACKAGING:

Good commercial practice will be followed in packaging the equipment for delivery by common carrier. Attention will be given to protecting the test stand from rough handling during transportation. Prior to packaging, equipment which has been fabricated in sections will have section-to-section connections tagged and marked for proper re-assembly. All hoses, lines and ports will be covered to prevent entry of contaminant and foreign material. Fluid handling equipment sub-systems and components will be thoroughly drained and dried to prevent possible damage due to corrosion, freezing, or combustible vapors. Special attention will be given to protect delicate components during shipment.

7.2 DELIVERY:

HII shall deliver the Test Stand to Building 117 at Anniston Army Depot. HII shall notify the Contacting Officer ant ANAD at least 14 days prior to shipping.

SECTION VIII

WARRANTY

The Universal Hydraulic Test Stand HII Model HIS-300SP is guaranteed against defects in design and material for a period of Two (2) years after the installation. Under this warranty HII will repair or replace any defective equipment.

SECTION IX

CLOSED-LOOP COOLING SYSTEM

(OPTIONAL)

HII proposes and closed-loop cooling system "CHILLER SYSTEM" to provide chilled coolant fluid (in place of water) to both modules of the Test Stand i.e Hydraulic Power Supply and the Main Test Stand, at temperature of 50°F or higher.

The "Chiller System" consists of 40-ton chiller, coolant fluid tank, circulation pumps / motors, valves, gauges and the operator control panel.

The operator control panel provides diagnostic information of the system.

The following will apply for the "Chiller System".

Delivery:
HII will deliver the Chiller System to building 117 Anniston Alabama.

Installation:
HII will install the Chiller System outside the hydraulic shop area next to the Hydraulic Power Supply.

Performance Test:
HII will verify performance along with the Test Stand.

Training:
HII provides training within the 3-day Training of the Test Stand.

Warranty:

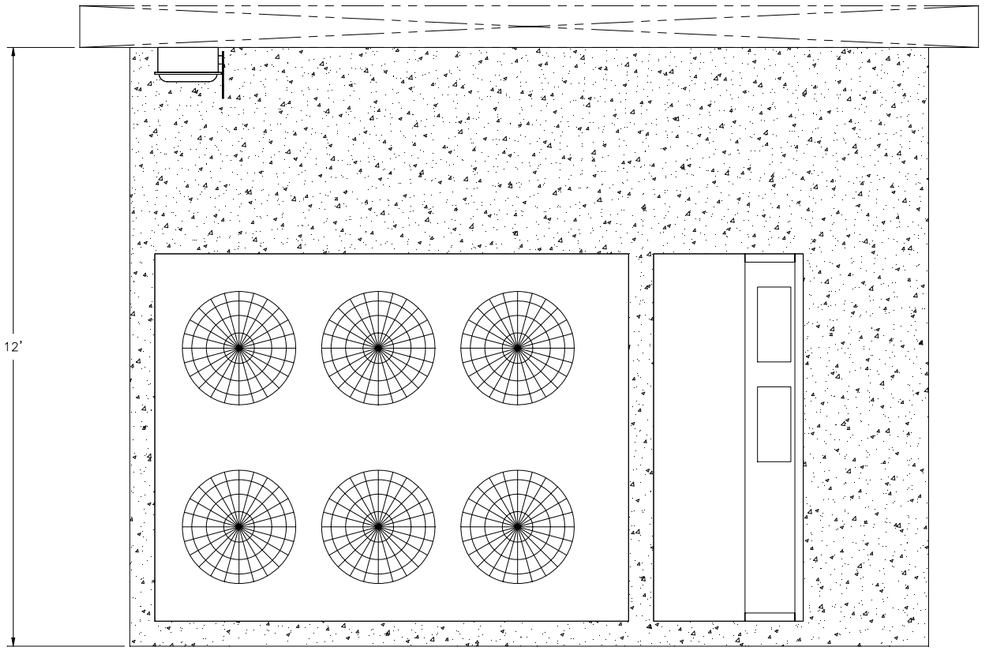
One year. HII reserves the right to have local service technician to perform the service warranty.

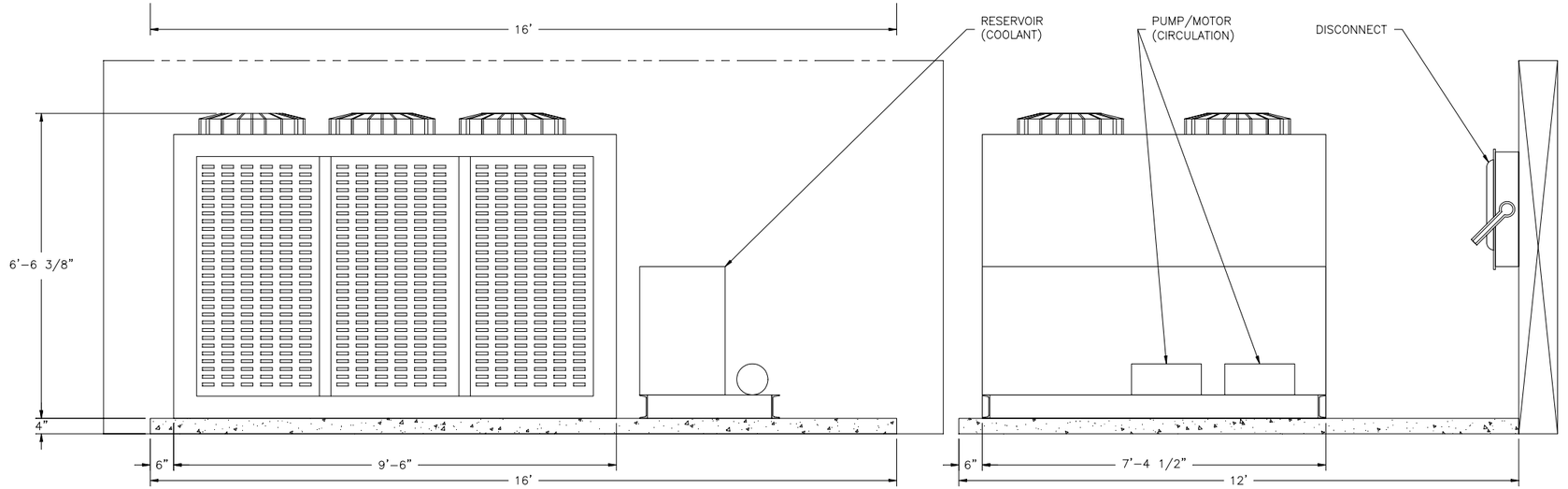
Note: See attached drawing for the Chiller System overall dimensions.

DWG. NO.	SH	REV.
XXXXX	1	

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED





QTY REQD	PART No.	DESCRIPTION	MATERIAL	SPECIFICATION	ITEM

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES, TOLERANCES ARE
FRACTION ±1/16 DECIMALS .XX ±.03 .XXX ±.010 ANGLES ±2°

FINISH:

NEXT ASSY | USED ON

APPLICATIONS

DO NOT SCALE DWG.

CONTRACT No.

APPROVALS	DATE
DRAWN SGR	01/03
CHECKED	
ISSUED	
ENGR.	

HYDRAULICS INTERNATIONAL, INC.
CHATSWORTH, CALIFORNIA

CHILLER INSTALLATION

SIZE	FSCM No.	DWG. No.	REV.
D	56529		

SCALE 1/16 WT. SHEET 1 OF 1

SECTION X

WATER REMOVAL SYSTEM

(OPTIONAL)

HII proposes a water removal system in the Hydraulic Power Supply module. This is an independent circuit and can be operated from the Main Test Stand.

The water removal circuit is consist of:

- Pump: a positive displacement pump.
- Motor: 1 HP 230/460 VAC, 3 Phase, 60 Hz.
- Water Removal Filtration Assembly.

WARRANTY

HYDRAULICS INTERNATIONAL, INC. (HII)

HII warrants that on the date of shipment, all goods manufactured by HII are free from defects in material and workmanship under normal use and service.

No warranty extended by HII shall apply to:

- Any goods which have been modified or altered by persons other than HII.
- Any goods subjected to any misuse, neglect, improper maintenance or accidental damage; or
- any goods manufactured by a third party.

HII's exclusive obligation under this warranty is, at HII's option, to repair or replace the defective goods (FOB origin).

This warranty is made on the condition that the customer gives HII immediate written notice of any defect (in no event later than two (2) years from the date of shipment/acceptance), that Customer gives HII access to the goods and Customer's relevant records and data and that HII's inspection reveals that Customer's claim is valid under the terms of this warranty. No returns will be accepted by HII unless accompanied by HII's Return Material Authorization (RMA).

With respect to third party goods, HII's warranty to Customer is that such goods are free of any rightful claims of their manufacturer. To the extent any warranties extended to HII by their manufacturer are transferable, HII shall transfer such warranties to Customer.

SOLICITATION NO. W911KF-05-Q-0049
REF: HII SRP E-41215

OPTIONS

The following options are not essential to the proposed solicitation end item "Universal Hydraulic Test Stand":

OPTION I	CHILLER SYSTEM CLOSED LOOP COOLING INSTALLED AT SITE	$37,000.00
OPTION II	WATER REMOVAL SYSTEM INSTALLED IN "HTS"	$3,600.00

52.00-4708 PAST PERFORMANCE PROPOSAL AND EVALUATION INFORMATION

RELEVANT PAST PERFORMANCE ON THREE (3) CONTRACTS within the past (3) years prior to closing of this solicitation:

Sales Order Z30880 – Lear Siegler Services

a. ***Description***: Commercial.
b. ***Name of contracting activity/commercial firm***: Lear Siegler Services
c. ***Contract number***: SATRDM0200
d. ***Contract type***: Fixed Price
e. ***Total contract value***: $321,000.00
f. ***Description of work/NSN***: Hydraulic Test Stand; Part Number: JEHA MARK III; Nomenclature: Hydraulic Test Stand.
g. ***Contracting Officer/Contract Manager, telephone number and e-mail address***:
Buyer: Dwaine McKinney
Telephone: (210) 403-8800
FAX: (210) 490-6070
h. ***Administrative contracting officer***: Same as g. above.
i. ***A brief summary***: Self-contained, stationary Hydraulic Test Stand for the testing of all hydraulic circuits and components in modern jets and jumbo jet aircraft. JEHA Mark II can test all components and hydraulic systems, both rotating and non-rotating, found in today's new generation of jet aircraft. Additional leading particulars can be found on the Technical Data Sheet enclosed for the JEHA MARK III.
j. ***Explanation of why contract or subcontract is considered relevant to proposed acquisition***: The construction and componentry contained with the JEHA MARK III will be similar to the unit we are offering to the Government in this proposal. For reliability, all parts and components utilized in our test stands have been selected from vendors that we have a history with.
k. ***Information on problems encountered***: The ultimate destination was Saudi Arabia. Delays were experienced due to non-receipt of information relative to the electrical requirements of the unit.

Sales Order Z21097 – Knorr Brake Corporation

a. ***Description***: Commercial.
b. ***Name of contracting commercial/commercial firm***: Knorr Brake Corporation
c. ***Contract number***: 60178
d. ***Contract type***: Fixed Price
e. ***Total contract value***: $79,067.10
f. ***Description of work/NSN***: Stationary Test Bench; Part Number: HII P/N 99784-100, Knorr Part No. 805839/1; Nomenclature: Stationary Test Bench.
g. ***Contracting Officer/Contract Manager, telephone number and e-mail address***:
Buyer: Paul Steedman
Telephone: (410) 875-1456

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

(End of Summary of Changes)

The following items are applicable to this modification:

QUESTIONS AND ANSWERS

1. The purpose of this modification is to provide questions and answers submitted by prospective bidders and provide picture of a similar Universal Hydraulic Test Stand.

a. Question: Please confirm min and max oil temperatures that will be required for component testing.

Answer: Test temperature for components ranges from 85F to 185F.

b. Question: Please confirm that a computer can be used to display data to the operator.

Answer: Digital displays are permissible, with analog gages being preferred. If digital displays are used they should be protected from interference from other sources. It is strongly preferred that a computer NOT be used.

c. Question: Please clarify your answer provided in Amendment 0003.

Answer: The Specification refers to the following subsystems:
Main system pressure circuit.
Auxiliary pressure circuit.
Static pressure circuit.
Supercharge circuit.
Motor test circuit.

d. Question: In Amendment 0003, is "high pressure" the auxiliary pressure? And which motor to rotate which pump are you referring to?

Answer: The "high pressure" mentioned in Amendment 0003 refers to the Static Pressure Circuit.

The "motor" mentioned would be the variable speed drive mentioned in section 3.1.4.3. It will be used to rotate/operate the pump being tested, such as the hydraulic pump 13211E3126 mention in section 9.0.

e. Question: Specification para. 3.1.5, Motor test circuit, includes para. 3.1.5.3 which refers to both the main and auxiliary pumps. However, para. 1.0 Scope clearly states that the motor test circuit is to be an independent circuit, and also states that the main and auxiliary pumps are also independent circuits. Please clarify what is to be independent and what is not.

Answer: Paragraph one is correct. The circuits: main system pressure circuit, auxiliary pressure circuit, static pressure circuit, supercharge circuit , and the motor test circuit must all be independent. Multiple circuits are sometimes used simultaneously during the testing of some components.

f. Question: Para. 3.4.11 calls for cooling above 80°F, but para. 3.4.12 requires a temperature range down to 70°F. This lower temperature will not be possible with 70°F cooling water. Please clarify.

Answer: A range of 80F to 180F should suffice. This reduces the margin between the capability of the test stand and the test requirements such as the 85F- 95F required for the Hydraulic Power Pack Assembly.

g. Question: In para. 3.1.5.1, does the hydraulic motor run only at 1800 rpm? Does the circuit need to be bi-directional? Is the motor open or closed hydraulic loop? What pressure and/or flow does it need?

Answer: The appropriate hydraulic circuit (Main or Auxiliary) shall be used to supply hydraulic power to the motor.

h. Question: Para. 3.1.4.2 calls for the supercharge pump to have settable flow. The flow of a supercharge pump is usually automatically determined by the inlet flow of the main pump being tested. Do you really need supercharge pump flow to be settable?

Answer: Pressure should be settable, not flow.

i. Question: Para. 3.1.4.4 calls for speeds down to zero rpm. Extremely low speeds are impracticable without auxiliary cooling for the electric motor. Can you accept a minimum of 10% of base speed ?

Answer: Zero rpm is required. (The time spent 0 - 500 rpm is normally short.)

j. Question: The torque sensors in para. 3.1.4.5 and 3.1.5.2 call for accuracy of 0.5%. Is this of full scale, since this accuracy cannot be achieved at extremely low readings?

Answer: 0.5% of Full Scale

k. Question: Paragraph 3.4.6 specifies that the temp. of the test fluid be held to +/- 5 deg. of the set point. Paragraph 3.4.11 specifies a temp. range of the test fluid to be 70 to 180 deg. F. The cooling water available at ANAD is 70 deg. If these specifications are correct we will have to supply a very large and expensive chiller to maintain the set temp. Please verify the specifications.

Answer: A range of 80F to 180F should suffice. This reduces the margin between the capability of the test stand and the test requirements such as the 85F- 95F required for the Hydraulic Power Pack Assembly.

l. Question: Main system pressure circuit, section 3.1.1.2 The 4 way, 3-position directional valve called out will it be electrically operated or manual operated?

Answer: The valve can be electrically or manually operated. However, the valve be easily operable at up to 500psi (preferably 1000psi). The test stand is frequently used to operate (extend and retract) hydraulic cylinders of various sizes. This valve is used to determine if the cylinder is being extended or retracted. The valve is switched from one position to the other without removing hydraulic pressure.

m. Question: Paragraph 3.1.1.2 Does the four-way, 3 position valve need to handle the full 60 gpm?

Answer: Yes. The valve must also be easily operable at up to 500psi (preferably 1000psi). The test stand is frequently used to operate (extend and retract) hydraulic cylinders of various sizes. This valve is used to determine if the cylinder is being extended or retracted. The valve is switched from one position to the other without removing hydraulic pressure.

n. Question: Regarding paragraph 3.4.5- The most current revision level of this specification is D. Please advise which is to be our responsibility.

FAX: (410) 875-0811

h. ***Administrative contracting officer***: Same as g. above.

i. ***A brief summary***: The Hydraulic Test Bench (HTB) provided testing and troubleshooting capabilities for the mechanical and electro-hydraulic equipment supplied by Knorr Brake for Salt Lake City SD100 and SD160 cars. The HTB produced all operation commands and all input signals necessary to fully exercise all functions and components of the units under test to accurately measure and indicate all of the signals, responses, and outputs produced by the units with lamp indicators, displays or gauges. The HTB was designed to enable a technician to carry out maintenance work, perform rapid testing, troubleshooting and calibration of the equipment under test.

j. ***Explanation of why contract or subcontract is considered relevant to proposed acquisition***: This contract was included to provide the Government with evidence of Hydraulics International, Inc.'s expertise and experience in fulfilling the specific requirements and individual operating applications of our customers in supplying Stationary Hydraulic Test Stands.

k. ***Information on problems encountered***: None were noted.

Sales Order Z10522 – Warner-Robins Air Force Base

a. ***Description***: Government.

b. ***Name of contracting commercial/commercial firm***: Warner-Robins Air Force Base

c. ***Contract number***: F09603-01-D-0105/0001 and F09603-01-D-0105/0002

d. ***Contract type***: Fixed Price, Multi-Year Contract

e. ***Total contract value***: $1,797,764.00 (Order 0001) and $9,997,440.00 (Order 0002)

f. ***Description of work/NSN***: Hydraulic Test Stand, HCT-20 w/VSD, NSN: 4920-01-486-3625 RN; Part Number: HII P/N 010231-100; Nomenclature: Hydraulic Test Stand and Hydraulic Test Stand, HCT-20 w/o VSD, NSN: 4920-01-506-6200 RN; P/N 010232-100; Nomenclature: Hydraulic Test Stand.

g. ***Contracting Officer/Contract Manager, telephone number and e-mail address***:
Buyer: Webster Stubbs/LEKSH
Telephone: (478) 222-1866
e-mail: Webster.Stubbs@robins.af.mil

h. ***Administrative contracting officer***: Same as g. above.

i. ***A brief summary***: In accordance with Purchase Description PD97-LDEE-09 for Hydraulic Component Test Stands, HCT-20 Types I & II, the two configurations of the non-portable test stands will test aircraft hydraulic components. The two configurations are identical except for the inclusion of the Variable Speed Drive System (VSD). The HCT-20 Hydraulic Component Test Stand was designed to perform all functional and operational tests on hydraulic components, including (and not limited to) motors, pumps, actuators and control valves, from both rotary and fixed wing aircraft. Please see the attached Technical Data Sheet for additional leading particulars of this unit.

j. ***Explanation of why contract or subcontract is considered relevant to proposed acquisition***: Hydraulics International, Inc. is working closely in cooperation with the

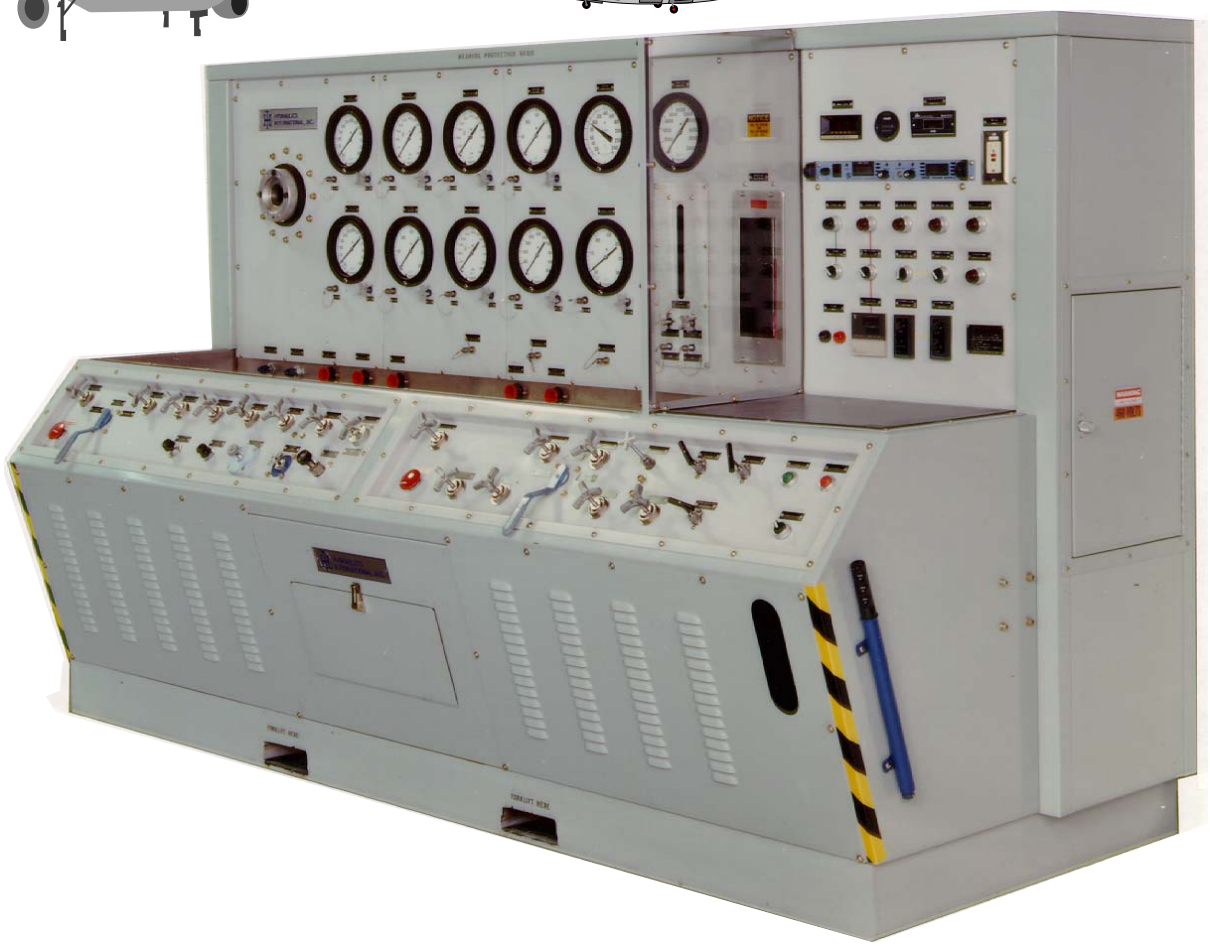
Government in assuring that the Government's requirements are incorporating in the performance and operation of the Test Stand. This contract demonstrates Hydraulics International, Inc. knowledge and expertise in the fabrication of Stationary Hydraulic Test Stand.

k. ***Information on problems encountered***: Currently waiting a revised Purchase Description to ship production units.

Sales Order Z00792 – III Corps and Fort Hood Contracting Command

a. ***Description***: Government.
b. ***Name of contracting commercial/commercial firm***: Fort Hood Contracting Command
c. ***Contract number***: DAKF48-00-M-0347
d. ***Contract type***: Fixed Price.
e. ***Total contract value***: $216,000.00
f. ***Description of work/NSN***: Provide an updated version of the HA5-123567 Hydraulic Test Stand that was previously supplied from the 40's to 60's as the presently configuration had become obsolete.
g. ***Contracting Officer/Contract Manager, telephone number and e-mail address***:
Buyer: Rebecca Coon
Telephone: (254) 287-5479
e-mail: Rebecca.coon@hood.army.mil
h. ***Administrative contracting officer***: Same as g. above.
i. ***A brief summary***: Although the description of the contract stated that HII was to rebuild/upgrade the Test Stand, HII actually provided the Army with a new Test Stand in accordance with current manufacturers specifications. The intent of the Test Stand was to provide maintenance on the Army's Force Mod rotary wing aircraft: AH64, UH60 and OH58. All systems and components were new manufacture and in current use. The unit was to perform functional test on hydraulic components such as actuators, control valves, regulators, accumulators, specialty valves, manifold sub system and systems. The unit provided a maximum of 5,000 PSI with normal operating pressure of 3,000 PSI with a flow from 2 to 22 gallons per minute. All gages, flow meters and other instrumentation were calibrated to a high degree of accuracy consistent with the most rigid specification in the aircraft industry. The electric motor and starter combination was 440 volt, 3 phase and 60 cycle.
j. ***Explanation of why contract or subcontract is considered relevant to proposed acquisition***: This unit is in operation today and the end user has affirmed their satisfaction with the performance and function of this unit. Also, the requirements set forth within this solicitation are very similar to the requirements of this particular contract.
k. ***Information on problems encountered***: None noted.

Universal Hydraulic Components Test Machines
HIS-300 Series



Hydraulics Int., Inc. has maintained its leadership in the design, development and manufacture of hydraulic testing machinery for airline, aircraft and accessory manufacturers and military services for well over 20 years. This period of continuous experience in creative design and manufacture, coupled with the recommendations from our world-wide field service organization, has brought into being the advanced design concept represented by the HIS Series of Hydraulic Test Machines and described in this brochure.

For functional and operational testing of all types and sizes of aircraft, missiles, ground support and industrial hydraulic components, valves, actuators, pumps, hydraulic motors, systems and sub-systems.

- **Flow capacities from 5 to 65 GPM.**
- **Constant or infinitely variable flow controls.**
- **Multiple circuits.**
- **Static test circuits to 30,000 PSI.**
- **Automatic Temperature control - Automatic Pressure Control**
- **Constant or infinitely variable pressure controls.**
- **Separate instrumentation for separate circuits.**
- **Pressure capacities from 500 to 5,000 PSI.**
- **Accurate, dependable. Minimum maintenance.**
- **Long trouble-free service.**

HYDRAULICS INTERNATIONAL, INC.

9201 Independence Avenue, Chatsworth, CA 91311 U.S.A.
Tel: +1(818) 718-2462
Fax: +1(818) 718-2459

DETAIL SPECIFICATIONS
CONSOLE

This console is constructed of heavy gauge sheet steel, bent into self-supporting sections and welded together, and welded to a sturdy 6″ to 8″ channel base. The front of the lower section contains large, louvered access panels which are easily removable. A full length door on the right end allows easy access to an enclosure which houses the electrical components. The rear of the machine is open for access and ventilation or as an option doors with louvers can be provided. The instrument panel is made up of multiple sections of steel sheet with the vertical edges turned in for rigidity. These panels are flush-mounted to the vertical surfaces of the console above the work table on a jogged section provided for the purpose. A deep sink, fabricated from corrosion resistant material, covers the whole work table section of the console. A stainless steel perforated plate is mounted over the full sink. A recessed, sloping control panel, incorporating the control valves, is mounted on the front of the machine and can be removed as a module.

DIMENSIONS

See Figure 1.

POWER SUPPLY

The power supply unit is shown in schematic diagram in Figure 2 and consists of the basic components listed. All reservoirs are made of stainless steel and are equipped with baffles, access plates for cleaning, site gauge, fill and vent caps. Vents contain micronic filters and fill caps contain strainers. The hydraulic power supply system is designed as a unit mounted on its own base and installed in the console under the working sump. The main pumps are axial, piston types with guaranteed delivery capabilities of 5,000 PSI for a minimum of 1,000 hours. The variable volume and compensator controls of the main pressure pump are mounted on the valve panel at the front where they are readily accessible to the operator. The pump is integrally mounted on the face of the motor with the shafts precisely aligned and operated through a flexible coupling. Boost pumps are utilized to extend the life of the main pump, and to deliver operating oil to the main pump, thus eliminating possible cavitation.

A filter installed between the main pump and the boost pump utilizes 10 micron elements. The filter sizes employed are a minimum of two times the rate of flow capacity. The elements can be removed from the outside of the machine with standard hand tools.

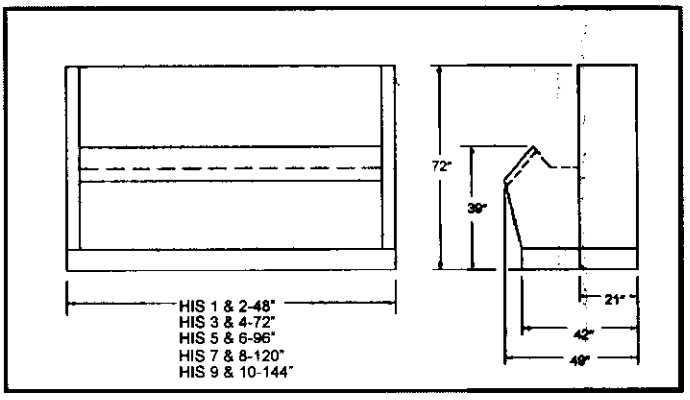


Figure 1. Dimensions All Models

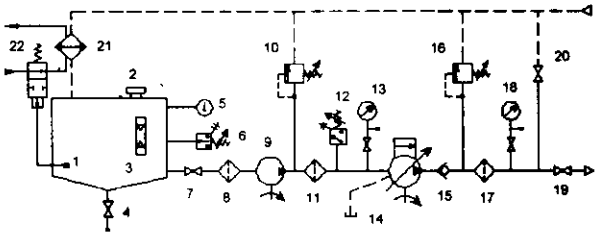
A heat exchanger of sufficient capacity is provided so that normal plant water flowing through the heat exchanger will maintain the required temperature of the hydraulic fluid automatically at all ambient temperatures up to 180°F.

Option: Power supply can be supplied as a separate module in order to reduce noise at the test shop area.

HYDRAULIC SYSTEM

The HIS Series Test Machines are as shown in Figure 3. This system consists of the power supply unit as described in Figure 2, a control system, and an instrumentation system.

The control valves are mounted behind and on an inclined panel in front of the test machine within easy reach of the operator. Control valves utilized are manufactured by Hydraulics International, Inc. and are installed as cartridge units so that the working parts of the valve can be removed from the front of the panel by a single operator without the necessity of opening the system, and without removing any other parts.



1. Reservoir assembly
2. Fill and vent cap
3. Liquid level indicator
4. Drain valve
5. Liquid temperature indicator
6. Temperature switch
7. Supply shutoff valve
8. Strainer
9. Boost pump
10. L.P. relief valve
11. L.P. filter
12. Pressure switch
13. Pressure gauge
14. Main pump
15. Check valve
16. H.P. relief valve
17. H.P. filter
18. H.P. gauge
19. Supply valve
20. Bypass valve
21. Heat exchanger
22. Temperature control valve

Figure 2. Power Supply Circuit

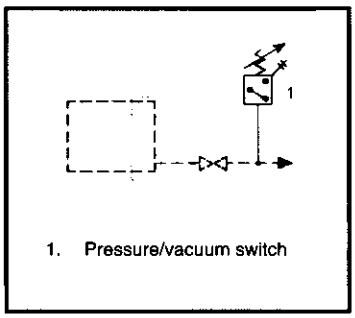


Figure 5.
Automatic Shutdown Circuit
(Code 3)

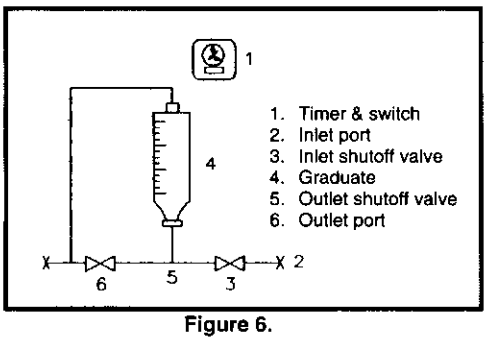


Figure 6.
Leakage Circuit
(Code 4)

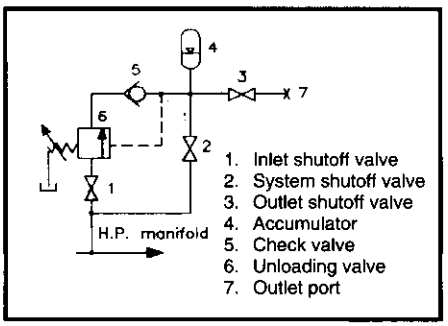


Figure 7.
Unloading Circuit
(Code 5)

A 6″ Dial Compound Gauge, calibrated 0-300 PSI and 0-30 in HG suction leading to an outlet port. This gauge also has a gauge cutoff valve, gauge shutoff, and calibration port.

Note: In addition, there is a 6″ dial system pressure gauge 0-6,000 PSI, and a system temperature gauge 6″ dial 20-240°F mounted on the panel. These two instruments are included as part of the power supply system.

Codes 1 and 2: A Flowmeter System is included with options of either 250 mm scales or 600 mm scales, depending upon the requirements of the customer. Single or multiple tubes are available to meet the reading accuracies and ranges required. Code numbers for flowmeters required should be selected from the chart, Figure 4.

Code 3: Filter Signal. This consists of a suction switch mounted between the reservoir and the main filter so that when the filter becomes clogged and requires replacement the switch will automatically cutoff the electric motor and actuate a light on the instrument pane. See Figure 5.

Code 4: Special Leakage Graduate (10 cu.in.) and circuit for testing external hand pumps is incorporated into the static leakage test circuit. A timer is used for leakage measurements, as shown in Figure 6.

Code 5: Pressure Unloading Circuit. See Figure 7. This circuit can be provided to test accessories which require a pressure unloading system either in complete pressure manifold of the machine and/or through an outlet port. It consists of a pressure unloading valve, check valve and accumulator with isolating shutoff valves.

Code 6: Bladder Type Accumulator (3,000 PSI) circuit, consisting of a bladder accumulator, an isolating valve, a connecting port and shutoff valve, as shown in Figure 8, with its accessories as required for testing pressure unloader regulator valves if unloading circuit in Code 5 is not included.

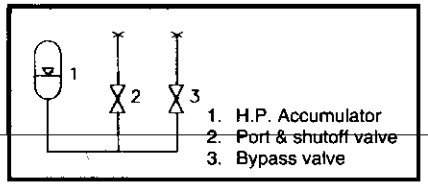


Figure 8. Accumulator Circuit (Codes 6 & 7)

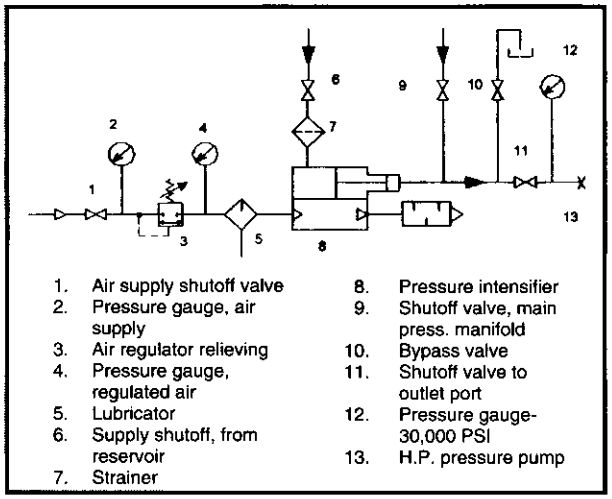


Figure 9. Boost Pressure System (Code 8)

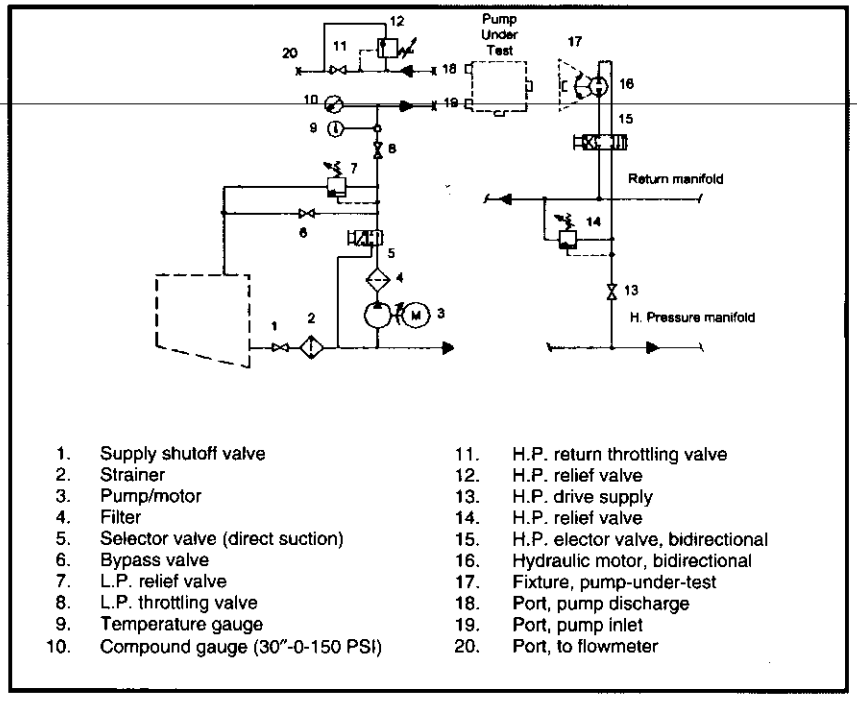


Figure 10. Reversible Pump Test Drive Circuit (Code 9)

- A Structure Assembly as previously described.
- A Power supply referred to and described in Figure 2.
- Selector Valve Assembly, consisting of a cone type, four-way selector valve with two cylinder outlets, and pressure shutoff valve Figure 3.
- A Single Outlet Valve Assembly, consisting of a system shutoff valve and a port assembly, a gauge shutoff valve and connecting port.
- Dual Outlet Valve Assembly, consisting of a system shutoff valve, two pressure shutoff valves and matching outlet ports, a gauge shutoff valve and connecting port, plus a pressure bypass valve to the return manifold block.
- A Flowmeter Bypass System, consisting of a connection from the pressure manifold through a pressure shutoff valve to the flowmeter assembly, a connection from an outlet through a shutoff valve to the flowmeter assembly and from the flowmeter to the return manifold.
- A High Pressure Static System, contains a hand pump, outlet and return ports with port shutoff valves, a filler and check valve, a connection to the power supply reservoir, connecting valves to the pressure manifold, and a bypass valve to the return manifold and a 20,000 PSI pressure gauge. (As an option a 30,000 PSI booster system is available.)
- A Return Manifold, contains connections to all bypass valves, the flowmeter return, and incorporates two shutoff valves leading to return port connection.

NOTE: All pressure ports are located on an inclined panel in the sump facing away from the operator for safety. All return ports are mounted in the sump facing the operator.

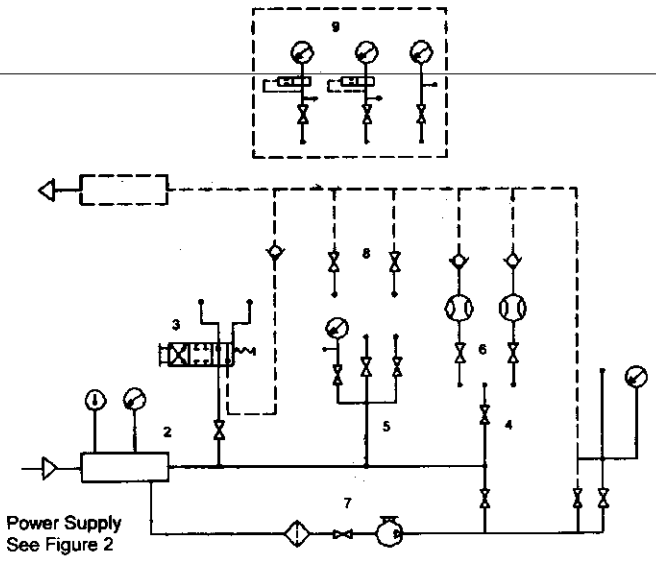
- An Instrument Panel with Gauge Grouping consists of the following:

	FLOWMETER OPTIONS		
	SPECIFY CODE NO.		
	600 MM ± 1% ACC.	250 MM ± 2% ACC.	MAX. FLOW IN GPM
	1A	2A	6
	1B	2B	8
	1C	2C	10
	1D	2D	12
	1E	2E	20
	1F	2F	25
	1G	2G	30
	1H	2H	35
	1J	2J	40
	1K	2K	50
	1L	2L	60
	1M	2M	75

Figure 4. Selection of Flowmeters (Code 1 and 2)

A 6″ Dial Pressure Gauge, calibrated 0-6,000 PSI leading to an outlet port on the instrument panel with gauge shutoff and calibration port.

A 6″ Dial Pressure Gauge, calibrated 0-1,000 PSI, leading to an outlet port mounted on the instrument panel with an automatic gauge cutoff valve, gauge shutoff valve, and calibration port. The gauge cutoff is set so that pressure above 1,000 PSI cannot reach the gauge.



1. Structure
2. Power supply consisting of electric motor, pump, regulating valves, filters, cooler, system temp. & pressure gauges
3. Selector valve circuit consisting of - selector valve, shutoff valve, check valve, 2 outlet ports
4. Single outlet circuit consisting of - system S.O. valve gauge - outlet ports
5. Dual outlet valve assembly
6. Flowmeter bypass circuit consisting of - system S.O. valve inlet port & shutoff valves to flowmeters
7. High press. static system consisting of a filter, hand pump (10,000 PSI) press. gauge, press. port, press. shutoff valve
8. Return circuit consisting of 2 return ports, 2 control valves
9. Gauge grouping consisting of compound gauge 30″ HG-0-300 PSI Press. Gauge 0-1000 PSI Press. Gauge 0-5000 PSI Gauge ports, shubber valves, gauge cutouts

Figure 3. Basic Hydraulic System

Code 7: Bladder Type Accumulator (5,000 PSI) circuit, consisting of an accumulator, an isolating valve, a connecting port and shutoff valve, as shown in Figure 8, with its accessories as required for testing pressure unloader regulator valves, if unloading circuit in ***Code 5*** is not included.

Code 8: Boost Pressure System - Figure 9. This is a 30,000 PSI static pressure system for performing high pressure static and leakage tests. This system connects to the main pressure manifold through a system shutoff valve, to an air-to-oil intensifier with 120 PSI air applied to one end of the intensifier will develop 30,000 lbs. oil static pressure. The ultra high pressure valve system is supplied with a high pressure outlet port and connects to a 30,000 PSI, 6″ precision gauge.

Code 9: Hydraulic Reversible and Variable Speed Drive and boost pump installation for testing hydraulic pumps. The drive has a speed range of 0-6,000 rpm. Adapter pads AND-20001, AND-20002 and 12 and 16 tooth spline blocks are provided. An electronic tachometer is calibrated 500 to 6,000 rpm. Variable suction or positive pressure heads can be applied to test pump as required. A 6″ compound gauge measures pump input pressure. See Figure 10.

Code 10: DC Power Supply. This regulated unit contains a 0-30 volt DC voltmeter, 0-20 amp DC ammeter. The instrument accuracy is 2% of full scale.

Code 11: High Pressure Filter - 10μ Nominal or 3μ Absolute Filtration.

Code 12: Safety and Splash Shield. Transparent safety glass or Plexiglass around test bench or pump test area can be provided as an option.

AVAILABLE MODELS

There are 11 basic models in the HIS series Hydraulic Accessories Test Machines, as described on the Ordering Chart - Figure 11. As shown in the figure the machines are available for either 50 or 60 cycles with constant flow, variable volume or pressure compensated pumps, and for the various fluids including Specification MIL-H-5606, Skydrol 500A or B, Oronite, or as specified. Larger sizes beyond the HIS-12 (125 HP) can be supplied upon request. JEHA MARK II, brochure HIS-100 or the JEHA MARK III, brochure HIS-200.

Additional outlet port systems can be added to the basic model, upon request.

Additional pressure gauge assemblies can be installed on the panel upon request. These gauges are fitted with calibration ports, needle valves, and pressure cutoff valves.

To meet unusual requirements a torquemeter for measuring drive torque of hydraulic pumps, calibrated 0-1,000 in.-lb., accuracy full scale, can be supplied at special request.

ORDERING INSTRUCTIONS

Select basic model number from the Ordering Chart, Figure 11. To this model number add suffixes shown in the Ordering Chart, Figure 11 thereby specifying cycles, pump characteristics, fluid use or explosion proof construction. Add code numbers for accessory systems you wish to include.

EXAMPLE: HIS-3, D, V, S, -1C, -5, -11.

This orders a standard 20 HP HIS-100 Series Universal Hydraulic Accessories Test Machine (HIS-3), for 60 cycle operation (D), variable volume pump type (V), for Skydrol fluid (S), with the following accessory systems: 600 mm flowmeter-maximum flow 10 GPM plus or minus 1% accuracy (1C), Pressure Unloading Circuit (Code 5), High Pressure Filter (Code 11).

NOTE: If hydraulic fluid is not listed in Figure 11, specify fluid and viscosity.

If extra circuits are required, please define. If your basic requirements cannot be met by the HIS-300 Series Test Machines as described in this brochure, please contact the factory for configurations to meet your exact requirements.

SPECIFY SUFFIXES

BASIC MODEL NO.	ELEC. POWER SUPPLY: 60 CYCLE	ELEC. POWER SUPPLY: 50 CYCLE	PUMP TYPE: VAR. VOL.	PUMP TYPE: PRES. COMP.	FLUID TYPE: CON. FLOW	FLUID TYPE: MIL-5606, MIL-H-5606 MIL-H-83282	FLUID TYPE: SKYDROL	FLUID TYPE: ORONITE	FLUID TYPE: SPECIFIED	HORSEPOWER	MAX. FLOW GPM AT MAX. PRESS: MAX. PRESSURE P.S.I.	MAX. FLOW GPM AT MAX. PRESS: 60 CYCLE	MAX. FLOW GPM AT MAX. PRESS: 50 CYCLE
HIS-1	D	E			C	M	S	O	X	10	3000	6	5
HIS-2	D	E			C	M	S	O	X	15	3000	8	6
HIS-3	D	E	V	R	C	M	S	O	X	20	5000 3000	6.5 10	6.5 8.5
HIS-4	D	E	V	R	C	M	S	O	X	30	5000 3000	10 10	8.5 8.5
HIS-5	D	E	V	R	C	M	S	O	X	30	5000 3000	10 17.2	10 16.5
HIS-6	D	E	V	R	C	M	S	O	X	40	5000 3000	13 22	13 22
HIS-7	D	E	V	R	C	M	S	O	X	50	5000 3000	16.5 30	16.5 25
HIS-8	D	E	V	R	C	M	S	O	X	60	5000 3000	20 35	20 35
HIS-9	D	E	V	R	C	M	S	O	X	75	5000 3000	25 40	25 35
HIS-10	D	E	V	R	C	M	S	O	X	100	5000 3000	35 60	35 50
HIS-12	D	E	V	R	C	M	S	O	X	125	5000 3000	40 65	40 60

Figure 11. Ordering Chart (see example)

HIS-300 Series

offers accuracy, maintainability, reliability, and long-life

FEATURES. Functional arrangements are such that testing of components is easy, fast and efficient. All controls are mounted on an inclined panel at the front of the machine within easy reach of the operator. Pressure connecting ports are mounted on an inclined panel on the front of the sump and face away from the operator so that pressure connections to the equipment under test are within easy reach. These ports are positioned adjacent to the control valves for ease of identification. Return ports are mounted on the vertical panel of the sump facing the operator and opposite the pressure ports. With this arrangement the operator is protected against discharge of hot oil if a valve is inadvertently left open. This arrangement also makes it unnecessary to reach across and around the equipment under test in order to operate the valves. A perforated stainless steel work table is mounted in the sump below the valve ports and above the inclined bottom of the sump to provide a flat, clean, oil-free working area.

ACCURACY. All gauges, flowmeters and other instrumentation are mounted on a vertical instrument panel behind the sump and are located for easy reading from any position. All instruments are calibrated to a high degree of accuracy consistent with the most rigid specifications in the aircraft industry. All gauges and meters are provided with facilities for contamination-free re-calibration, without removal from the machine. All gauges utilize 6″ dials and are guaranteed to 1/2 of 1% accuracy full-scale. Flowmeters are guaranteed to 1% accuracy full-scale. Higher degrees of accuracy can be obtained upon request.

MAINTAINABILITY. With the exception only of the pump and motor assembly, every component is accessible from the outside of the machine and can be readily repaired. The pump and motor assembly can be removed as a unit by disconnecting two swivel hose connections, and four bolts. All the electrical equipment is housed in a single box mounted on the side of the machine and is installed in such a manner that repairs or replacements can be made from the outside of the machine without disturbing any other component.

RELIABILITY. Hydraulics International, Inc., with extensive experience dictates the choice of the finest components and instruments, with years of proven dependability. This, coupled with the expert, specialized craftsmanship of men who take pride in their work, and backed by a management philosophy devoted to turning out the very finest test machinery in the industry, results in equipment with a high built-in reliability factor.

LONG-LIFE. Hydraulics International, Inc. Test machines are famous for their long service life, resulting from experience in building the finest hydraulic test equipment of its kind. Many machines have been in continuous operation better than 20 years with a minimum amount of maintenance. The construction and selection of components is such that a 20 year life span can be expected with proper use.

GENERAL SPECIFICATIONS.

This brochure covers the Hydraulics International, Inc. Standard Series of Universal Hydraulic Accessory Test Machines, designated as the HIS Series, for the purpose of testing airplane, missile or support equipment hydraulic components such as actuators, control valves, regulators, accumulators, specialty valves, manifolded sub-systems and systems.

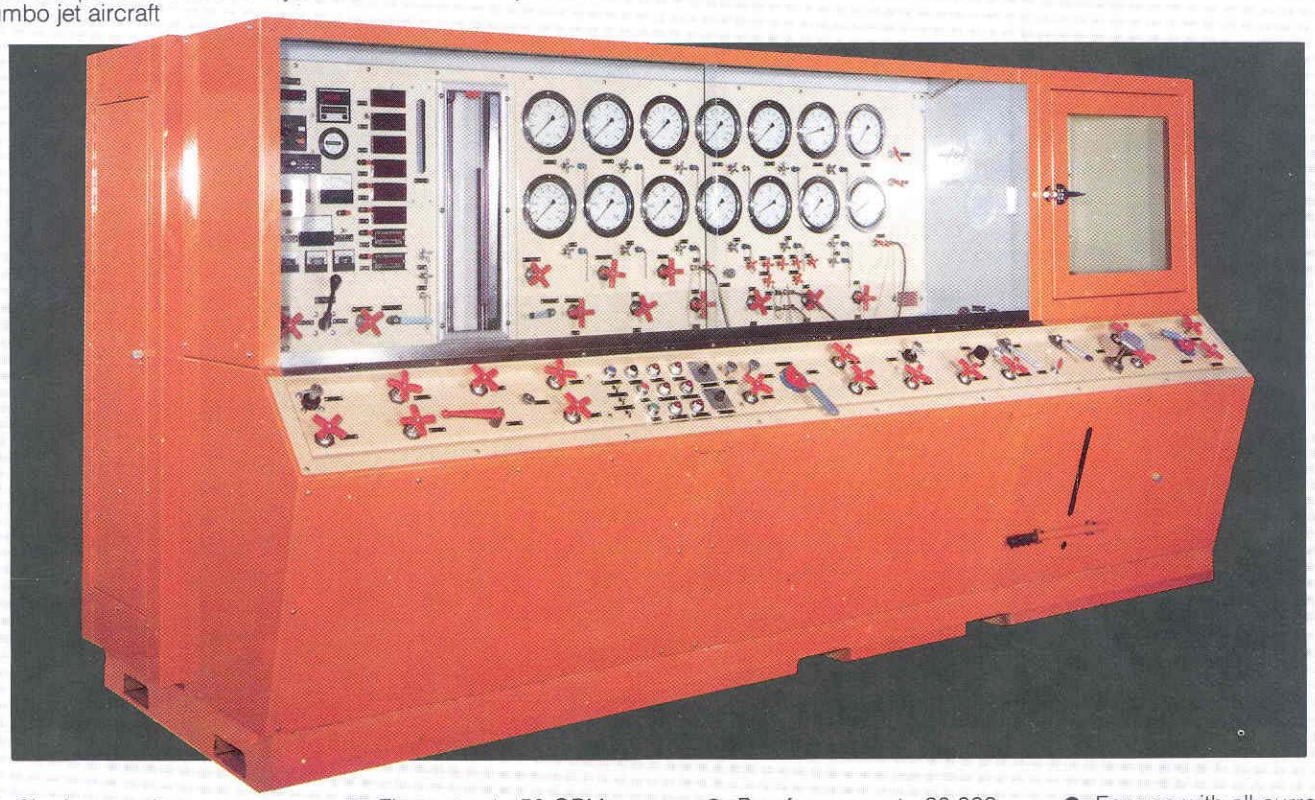
The machines in the HIS-300 series are rated for 5,000 PSI maximum, 3,000 PSI normal operating pressures and flows from 5 to 65 gallons per minute. 5 sizes of consoles are available. See Figure 1.

Electric motor and starter combinations are available for 230/460-60 cycle-3 phase; 208/380-50 cycle-3 phase. Special voltages are available. Contact the factory with specifications. " Part-winding " starting is available on motors above 50 HP. The electric motors utilized are open drip-proof, in accordance with the requirements of American Standard C-50 N.E.M.A. Standard MG-I and National Board of Fire Underwriters Pamphlet #70. Fully enclosed or explosion-proof electrical equipment is available upon request.

JEHA MARK III

Hydraulic test stand for jumbo jets

- One test stand for all hydraulic circuits and components in modern jet and jumbo jet aircraft
- Human engineered for noise reduction, safety, convenience
- Enclosed test compartment for pumps and motors



- Single console or remote power supply
- Flow rates to 50 GPM; Pressures to 5000 PSI
- Proof pressure to 20,000 PSI
- For use with all current hydraulic fluids

New JEHA Mark III Hydraulic Test Stand can test all components and hydraulic systems, both rotating and non-rotating, found in today's new generation of jet aircraft

Self-contained, JEHA Mark III can be placed in action simply by connecting the test stand to sources of electrical power, shop air and cooling water.

All circuitry conforms to NEMA, JIC and other applicable codes.

The JEHA Mark III all-steel cabinet is designed for convenience and efficiency, and is human-engineered for safety and minimum maintenance. An eye level instrument panel permits easy reading, while the full-length work area is all stainless steel. A fully enclosed and insulated test compartment minimizes noise levels when testing pumps and motors.

For further noise reduction, JEHA Mark III is available in two styles: an acoustically-treated single structure with four doors at the rear for access to power components; or a two-section arrangement, with power supply system remotely located from the test console.

Test Capabilities

- **100 HP Regulated Variable Speed Hydraulic Drive** includes a hydraulic motor and gearbox with single output spindle. Driving through a two-range gearbox, the unit provides speed ranges of 100 to 4000 RPM and 600 to 10,000 RPM, bi-directional.
- **Hydraulic Circuit,** with 150 gallon stainless steel reservoir, incorporates all components necessary to assure circulation of clean (3 micron absolute) hydraulic fluid, all required test unit inlet and outlet pressures, test until case pressure and adequate cooling capacity. The hydraulic supply section may be included in the main structure, or may be mounted on a separate base for remote location, with remote elect. Volume and pressure controls (optional).
- **Main Supply Pump** is capable of delivery 55 GPM at 3000 PSI or 37.5 GPM at 5000 PSI. The pressure-compensated pump is a variable displacement type with handwheel volume control.
- **A Low Pressure Supercharge Pump** is supplied to boost pressure for test pumps operating at high speeds. The 120 GPM centrifugal supercharge pump supplies up to 100 PSI boost pressure and can be regulated from 5 to 100 PSIG. Pressure for tests at lower and sub-atmospheric pressures is controlled by a throttle valve. As a safety feature, supercharger pump must be operating at preset pressure before main pump will start.
- **20,000 PSIG Auxiliary Static Proof Pressure Pump** is supplied with the stand.
- **Fluid Cooling** is provided by a water-to-oil heat exchanger, and a self-acting controller maintains fluid at 140° ± 10°.

Hydraulics International, Inc. 9000 Mason Avenue Chatsworth, California 91311

JEHA MARK III Hydraulic test stand for jumbo jets

Test Capabilities *(continued)*

- **All Relief and Control Valves** necessary to testing operations are carefully selected and identified with nameplates. Controls, instrumentation and accessory drives are located to permit one operator to perform all phases of the test.

Instrumentation

- Pressure Gauge needle valves are located close to each gauge.
- Speed indicator measures speeds of both hydraulic pumps and fluid motors being tested.
- Temperature Gauge reads fluid temperature from 20° to 220°F.
- Speed controls for the drive unit are located on the control panel.
- Pressure indicating Gauges and instruments are specially selected for hydraulic test service.

SPECIFICATIONS

Pump Tests

Drive speed	100 to 4000 RPM; 600 to 12,000 RPM.
Drive Torque	
Low speed range	100 to 4000 RPM — 1600#in.
High speed range	600 to 10,000 RPM — 675#in.
Test pump output press.	4000 PSI max.
Test pump inlet press.	5 to 100 PSIG

Motor and Valve Tests

Available flow to test motor or valve 0 to 50 GPM at 4000 PSIG. Load pump incorporates valve circuit for bi-directional rotation of motor under test without changing control ports. Load pump also used as drive motor for pump tests.

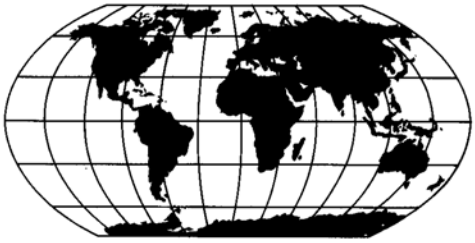
General

Drive horsepower	125 HP
Operating temperature range	90°F to 150°F
Fluid filtration	3 microns absolute
Reservoir capacity	150 Gallons
Supercharger and auxiliary pressure electric motor	15 HP
Regulating valve:	
Boost Pressure	100 PSIG (adjustable)
High Pressure	5000 PSI (adjustable)
Hydraulic Fluid	Skydrol 500-A & B, Aero Safe 2300, MIL-H-5606 or MIL-H-83282

Flow Comparison:
125 HP at 1800 RPM, 60 Cycles 60 GPM @ 3000 PSI; 37.5 GPM @ 5000 PSI
125 HP at 1500 RPM, 50 Cycles 50 GPM @ 3000 PSI; 37.5 GPM @ 5000 PSI

For detailed specifications on H.I.I. JEHA Mark III Jumbo Jet Test Stand, contact: Hydraulics International, Inc.

Hydraulics International, Inc.



A name respected in hydraulics around the world.

HYDRAULICS INTERNATIONAL, INC.
9000 Mason Avenue
Chatsworth, CA. 91311-6178
(818) 998-1231
FAX: (818) 718-2459

Printed in U.S.A. (4/93) S1500

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 of 6

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0005	21-Jan-2005	A52D5043151004	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DOC-ANNISTON ARMY DEPOT DIRECTORATE OF CONTRACTING 7 FRANKFORD AVENUE ANNISTON AL 36201-4199	W911KF	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)

Hydraulics International, Inc.
9201 Independence Avenue
Chatsworth, CA 91311

CODE FACILITY CODE

X	9A. AMENDMENT OF SOLICITATION NO. W911KF-05-Q-0049
X	9B. DATED (SEE ITEM 11) 14-Dec-2004
	10A. MOD. OF CONTRACT/ORDER NO.
	10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGE TWO

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
J. A. Riley, Vice President	TEL: EMAIL:

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)	1-26-05	BY (Signature of Contracting Officer)	21-Jan-2005

Answer: The specification requires revision level C of MIL-PRF-4610C.

o. Question: Regarding Paragraph 3.1.5.3- 60gpm at 3000psi requires more than 100hp. Are you planning on running the pump at a flow and pressure to keep the HP under 100?

Answer: No. The manufacturer is to size the electric motor to meet requirements, but it must be at least a 100hp motor. The electric motor can be larger than 100hp, but it cannot be less than 100hp minimum per paragraph 3.1.5.3.

p. Question: Is the directional valve described in paragraph 3.1.1.2 to be manual or solenoid operated with a selector switch?

Answer: Selection of the valve type is left to the stand manufacturer. The valve must be easily operable at up to 500psi (preferably 1000psi). The test stand is frequently used to operate (extend and retract) hydraulic cylinders of various sizes. This valve is used to determine if the cylinder is being extended or retracted. The valve is switched from one position to the other without removing hydraulic pressure.

q. Question: What is the cylinder bore and rod size described in paragraph 9.0. It may be on the drawings, but we have not gotten them yet.

Answer: The cylinder diameter and length varies. The items listed in paragraph 9.0 are representative parts, not a complete list. The cylinder diameters currently tested (subject to change) are between one and eight inches. The requirements of this specification are for a universal hydraulic test stand.

r. Question: What is the maximum pressure drop allowed for the return line flow meters?

Answer: The pressure drop caused by the flow meters should be kept to a minimum.

s. Question: Are you anticipating selector/shut-off valves for the flow meters? If so, manual or electrical?

Answer: It was planned for the flow meters to have separate connections (all of the flow meters can be used at one time, or none).

t. Question: Paragraph 3.1.4.2; Will you ever want to NOT supercharge a UUT pump? In other words, should we incorporate a bypass allowing the UTT to draw directly from the reservoir?

Answer: A bypass is not needed.

u. Question: Regarding 3.1.4.3- If the upcoming drawings do not show this, how much room do you need for the UUT pump? Do you expect the drive's shaft to extend into the UUT chamber (of so, how much?, or be flush to the front panel? Are we to supply the fixturing? If not, what interface is required to be able to utilize yours?

Answer: Test stand manufacturer is to supply the pump fixture. It must be possible to inspect all pump seals for leaks (pump cannot be mounted directly to test stand cabinet).

v. Question: Do you need/want a speed pick-up on the shaft to verify shaft speed and/or to operate the drive with a closed loop control, or is the drive's speed frequency/indication enough?

Answer: We prefer a speed pick-up on the shaft to verify shaft speed.

w. Question: Regarding 3.1.5- If the upcoming drawings do not show this, how much room do you need for the UUT motor? Do you expect the drive's shaft to extend into the UUT chamber (of so, how much?, or be flush to the front panel? Are we to supply the fixturing? If not, what interface is required to be able to utilize yours?

Answer: Test stand manufacturer is to supply fixture.

x. Question: Regarding paragraph 3.1.5.4- Is the power supply's voltage to be adjustable?

Answer: Paragraph 3.1.5.4 requires that the power supply be capable of providing 24 +5/-0 volts at up to 62 amperes DC.

y. Question: Regarding paragraphs 3.2.1, 3.2.2, and 3.4.19- Is the test stand frame and enclosure to be corrosion resistant steel, or can it be painted steel per 3.2.1? Please clarify. If painted is ok, is there a paint and/or a painting specification to use?

Answer: Metals to meet the requirements set forth in section 3.2.2.

z. Question: Regarding paragraph 3.3.16- Is the timer to be tied into any of the stand's controls in any way?

Answer: No. Visual only.

aa. Question: Regarding paragraph 3.4.1- Please clarify the voltage statements. It requires the stand to be initially wired for 460 VAC incoming power. Is it possible that the stand will be required to take 230VAC in the future?

Answer: The Government will provide 460 volt, three phase power to the main disconnect. It is not anticipated that the stand will be required to take 230 VAC in the future.

bb. Question: Regarding paragraph 3.4.1- Is the size of the disconnect enclosure to be included in the overall maximum size restriction specified in paragraph 3.3.3?

Answer: Yes

cc. Question: Regarding Paragraph 3.4.6 and 3.4.11- Please confirm and/or clarify these paragraphs. The coldest water temp is 70F, but the oil is required to be controlled down to 70F. We would need a chiller to do this.

Answer: A range of 80F to 180F should suffice. The test stand manufacturer must determine if a chiller is required, and incorporate it into the stand design if it is needed.

dd. Question: Regarding Paragraph 3.4.7 (last sentence)- Is the phrase 'easily accessible for removing and cleaning' exclude emptying the reservoir? In other words, should we install an external strainer with a shut-off between it and the reservoir so that it does not have to be removed?

Answer: A strainer which required the reservoir to be drained in order to service the strainer would not be considered 'easily accessible'. Whether or not an external strainer (w/isolation valve) would be considered 'easily accessible' depends on the location of the equipment/piping around it.

ee. Question: Regarding Paragraph 3.4.8- Are you just looking for a bottom drain, or are we to incorporate a water removal system?

Answer: This refers to a bottom drain. However, please quote a water removal system as an option.

ff. Question: Regarding Paragraph 3.4.9- Is this reservoir in addition to the main reservoir? It is a bit small for 60gpm of flow on a test stand with temperature control.

Answer: Paragraph 3.4.9 refers to the main reservoir. If a manufacturer's design requires a larger reservoir, this should be clearly indicated on their proposal.

gg. Question: In paragraph 3.1.5.3 of the work statement it is specified that the electrical motor for the main pump shall be rated to 100hp. The main pump has 60gpm at 3000psi (paragraph 3.1.1.1). According to our calculations the electric motor has to be rated to about 120hp (total efficiency of the pump estimated as 0.88). Please advise.

Answer: The manufacturer is to size the electric motor to meet requirements, but it must be at least a 100hp motor. The electric motor can be larger than 100hp, but it cannot be less than 100hp minimum per paragraph 3.1.5.3.

hh. Question: In paragraph 3.1.5 (Motor test circuit) of the work statement it is specified that the dynamometer will be rated for 236 foot pounds minimum at 1800rpm. Please advise if the speed range for testing motors is also 0-1800 rpm or different.

Answer: The speed range for testing motors is 0-1800 RPM. The specification is for a universal hydraulic test stand.

ii. Question: Main system pressure circuit, section 3.1.1.2. The 4 way, 3 position direction valve is left up to the contractor.

Answer: Selection of the 4 way, 3 position direction valve is left up to the contractor.

jj. Question: Auxiliary pressure circuit. Section 3.1.2.2 paragraph 9 is not in specifications?

Answer: Paragraph 9 in included in Amendment 1 dated 16 Fdecember 2004, page 10.

kk. Question: Does Anniston Army Depot have an preference in control manufactures? Example: Square D, Barksdale, and Tescom.

Anster: The Government does not specify suppliers. Selection of control manufacturers is left up to the contractor.

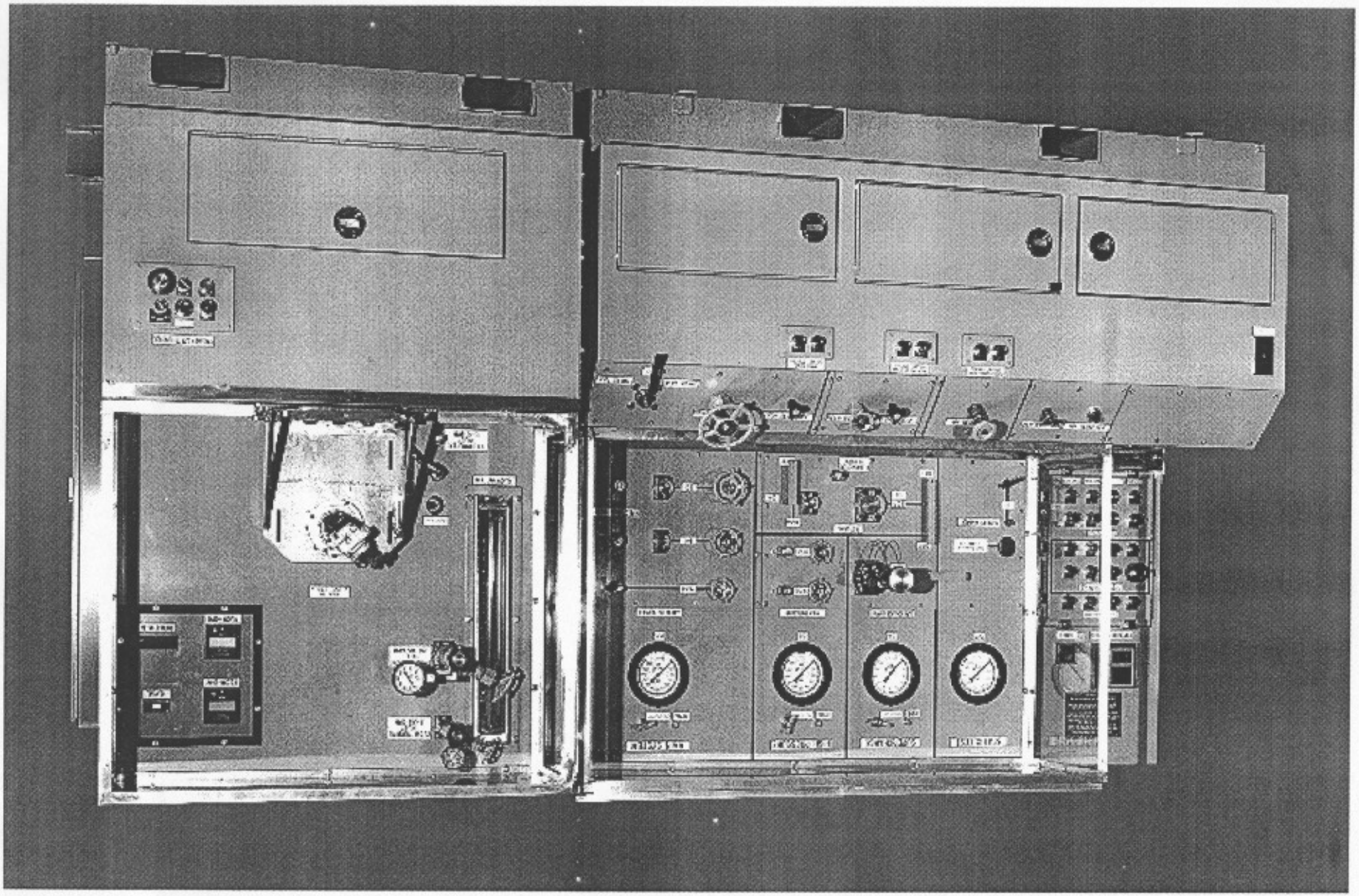
ll. Question: DC motor test circuit, section 3.1.5.4, reference part number 12282832 is not in bid specifications. Should it be in bid?

Answer: Part number 12282832 is included in Appendix 1, Drawings.

2. Attached is a picture of a similar type Universal Hydraulic Test Stand.

3. The offer due date and time remains unchanged..

4. All other terms and conditions remain unchanged.



AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0004	18-Jan-2005	A52D5043151004	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DOC-ANNISTON ARMY DEPOT DIRECTORATE OF CONTRACTING 7 FRANKFORD AVENUE ANNISTON AL 36201-4199	W911KF	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
Hydraulics International, Inc. 9201 Independence Avenue Chatsworth, CA 91311	X	9A. AMENDMENT OF SOLICITATION NO. W911KF-05-Q-0049
	X	9B. DATED (SEE ITEM 11) 14-Dec-2004
		10A. MOD. OF CONTRACT/ORDER NO.
CODE FACILITY CODE		10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

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SEE PAGE TWO

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15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
J. A. Riley, Vice President	TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA
(Signature of person authorized to sign)	1-26-05	BY (Signature of Contracting Officer)
		16C. DATE SIGNED 18-Jan-2005

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

NOTES

1. The purpose of this modification is to add Drawings, attachments and extend Offer Due Date and Time.

   a. Attached are Drawing and Attachments 2 through 9.

   b. The Offer Due Date and Time is extended to 27 January 2005, 9:00 a.m. local time.

2. All other terms and conditions remain unchanged.

SECTION SF 1449 - CONTINUATION SHEET

SOLICITATION/CONTRACT FORM

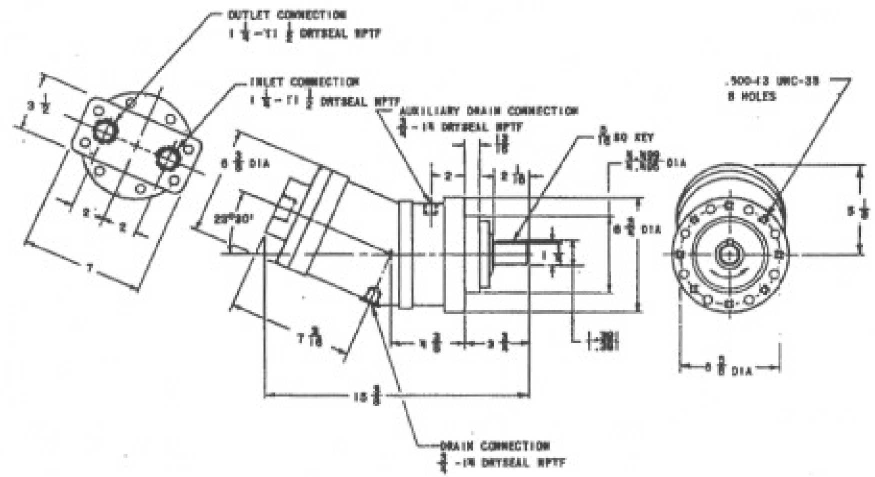
The required response date/time has changed from 24-Jan-2005 09:00 AM to 27-Jan-2005 09:00 AM.

(End of Summary of Changes)

[illegible]

ONLY THE ITEM DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) LISTED HEREON IS APPROVED BY MERADCOM FOR USE IN THE M9OA1 AND M48A5 AVL BRIDGE LAUNCHER. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY MERADCOM.

REVISIONS				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		DATA	[illegible]	[illegible]
B	C-1	STANDARDS UPDATED	[illegible]	[illegible]
C		SEE ECP 72HE0301	[illegible]	[illegible]
D		SEE NOR.	[illegible]	WILKINS
E		SEE ECP NO. 80HE1052	[illegible]	[illegible]
F	- -	SEE ECP NO. 92HE3181	[illegible]	[illegible]



NOTES:

1. REQUIRED CHARACTERISTICS:
   a. PUMP DELIVERY - 31.5 GPM @ 1800 RPM.
   b. WORKING PRESSURE - 3000 PSI.
   c. HYDRAULIC FLUID - MIL-H-46170, TYPE I.
   d. FLUID TEMPERATURE - 180°F 20°.
2. FOR INTERPRETATION OF:
   SCREW THREAD STANDARDS, SEE FED-STD-H28.
   ABBREVIATIONS, SEE MIL-STD-12.
   DIMENSIONING AND TOLERANCING, SEE ANS Y14.5.
3. IDENTIFICATION OF THE APPROVED SOURCE(S) HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM DESCRIBED ON THE DRAWING.
4. DIMENSIONS WITHOUT TOLERANCES ARE NOMINAL, AND STANDARD TOLERANCES OF THE MANUFACTURER SHALL APPLY.

DISTRIBUTION STATEMENT A.
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

SOURCE CONTROL DRAWING

APPROVED SOURCES OF SUPPLY	
VENDOR PART NO.	VENDOR
VICKERS MODEL PF-2020-23-21-LR	SPERRY VICKERS AEROSPACE - MARINE - DEFENSE DIV SPERRY RAND CORP PO BOX 10177 5353 HIGHLAND DR JACKSON MS 39206 FSCM 82963

APPLICATION	
NEXT ASSY	USED ON
D13211E3185	D13211E3100

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
BREAK SHARP EDGES — TO —
ALL FILLETS — TO —
MATERIAL

U.S. ARMY MOBILITY COMMAND
ENGINEER RESEARCH AND DEVELOPMENT LABORATORIES
FORT BELVOIR, VA.

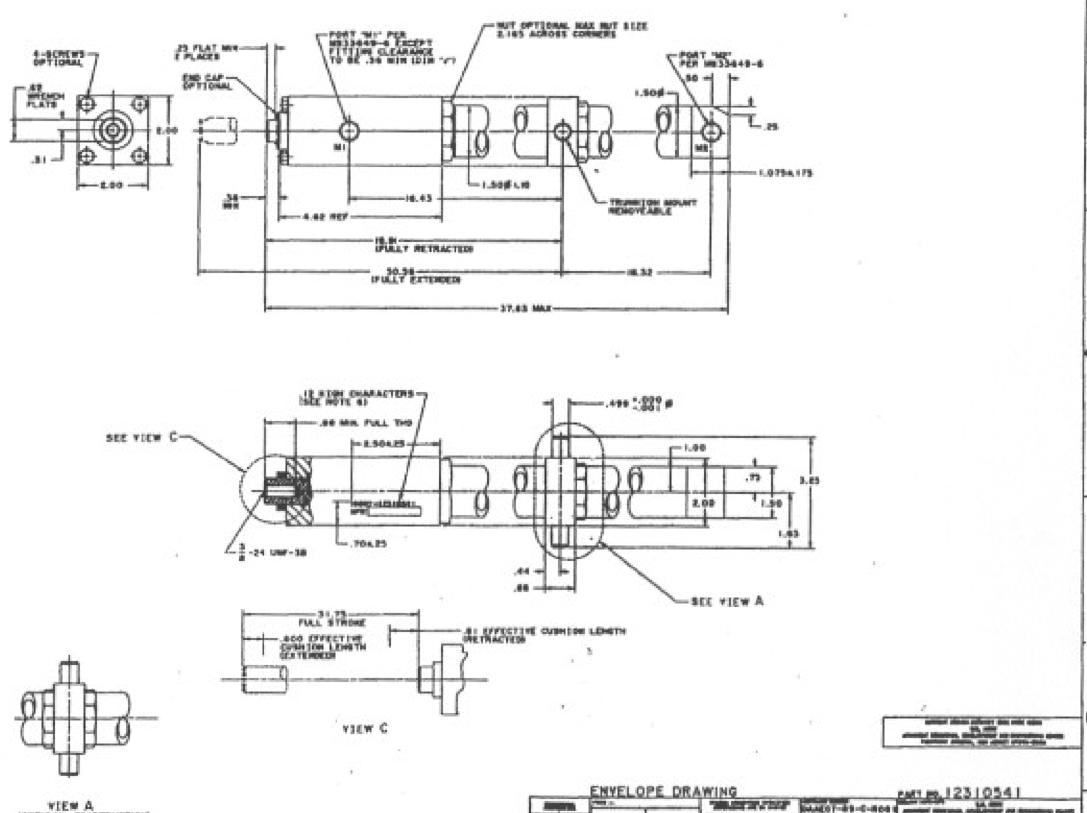
PUMP, HYDRAULIC

CODE IDENT. NO. 97403 SIZE C 13211E3126

SCALE: SHEET 1 OF 1

NOTES

1. DRAWING TO BE INTERPRETED IN ACCORDANCE WITH STANDARDS PRESCRIBED BY DOD-STD-100C
2. ALL PARTS CONTACTING OPERATING FLUID SHALL BE COMPATIBLE WITH HYDRAULIC FLUID PER MIL-H-46170
3. PISTON ROD SUPPORT AND PISTON SUPPORT TO BE LOW FRICTION MATERIAL, DISSIMILAR FROM ROD AND CYLINDER MATERIALS. CYLINDER BORE 1.125 Ø, ROD .750 Ø
4. ACTUATOR ASSY TO HAVE A ROD SCRAPER
5. PISTON ROD TO BE SURFACE HARDENED TO ROCKWELL C 50-60 WITH QUENCHED AND TEMPERED CORE HARDNESS OF ROCKWELL C 32-40, AND HARD CHROME PLATED FOLLOWED BY HYDROGEN EMBRITTLEMENT RELIEF TREATMENT PER SPEC QQ-C-320. SURFACE FINISH 16-24 MICRO INCHES
6. METAL STAMP IDENTIFICATION MARKING IN ACCORDANCE WITH STANDARDS REQUIREMENTS PRESCRIBED BY MIL-STD-130: 19207-12310541 (PROCURE CODE OR LOGO)
7. FINAL PROTECTIVE FINISH: FINISH [illegible] OF MIL-STD-171. APPLY PRIMER AND TOPCOAT IN ACCORDANCE WITH GENERAL REQUIREMENTS DRAWING NO. 12344345 COLOR WHITE.
8. PHYSICAL REQUIREMENTS: PROOF PRESSURE-2500 P.S.I.G. BURST PRESSURE-4000 P.S.I.G.
9. CUSHIONING REQUIREMENTS: PISTON CUSHIONING TO DECELERATE A 270 LB. MASS (ATTACHED TO THE PISTON ROD) FROM 25 IN./SEC MIN. TO 10 IN./SEC MAX. WITHIN SPECIFIED DISTANCE AT EITHER END OF STROKE WITH 1650±50 PSI SYSTEM PRESSURE AND 150°±5°F OIL TEMP.
10. PERFORMANCE REQUIREMENTS:
    10.1 OPERATING FLUID SPEC — MIL-H-46170
    10.2 OPERATING TEMPERATURE RANGE — -65°F TO +275°F
    10.3 OPERATING PRESSURE — 1650±50 P.S.I.G
    10.4 LEAKAGE REQUIREMENTS: STATIC SEALS: NO LEAKAGE IS PERMITTED AT BODY SEALS WHEN EITHER PORT M1 AND/OR M2 IS PRESSURIZED TO 1650±50 P.S.I.G AND HELD FOR THREE MINUTES.
    10.5 DYNAMIC SEALS: PISTON-WITH PORT M1 OR M2 PRESSURIZED TO 1650±50 P.S.I.G. NO FLOW FROM OPPOSITE PORT SHALL BE ALLOWED [illegible] ALLOWED IN THREE MINUTES AT 150±5°F FOR COMPLIANCE OF SEALS UP TO 1CC/MIN SHALL BE ALLOWED AT -60°F AND +275°F
    10.6 ROD SEAL: CUMULATIVE LEAKAGE SHALL NOT EXCEED A SLIGHT WETTING OF THE EXTERNAL SURFACE (INSUFFICIENT TO FORM A DROP) PER 25 FULL TRAVEL CYCLES AT 1650 AND 200 P.S.I.G AND AT 150°F. AT -65°F LEAKAGE SHALL NOT EXCEED 1 DROP PER ANY TWO SUCCESSIVE FULL TRAVEL CYCLES. DURING 25 FULL TRAVEL CYCLES AT 2500 AND 200 P.S.I.G AT +275°F LEAKAGE SHALL NOT EXCEED 2 DROPS PER 25 FULL TRAVEL CYCLES AT 2500 AND 200 P.S.I.G.
11. EFFLUENT FLUID FROM THE ASSEMBLY SHALL MEET THE CLEANLINESS REQUIREMENT OF MIL-STD-1246 LEVEL 200, WHEN INFLUENT FLUID IS CLEAN TO MIL-STD-1246 LEVEL 200.
12. ENDURANCE LIFE: 30,000 CYCLES FULL EXTENSION TO FULL RETRACTION WITH 270 LB MASS ATTACHED TO PISTON ROD WITH 10 LBS. SIDE LOAD AT THE ROD BEARING.
    APPLY OPERATING PRESSURE AND 3.6 $^{+0.4}_{-0.0}$ GPM FLOW CONTROL IN [illegible] TO M1 PORT
13. QUALITY ASSURANCE REQUIREMENTS (QARS) APPLY TO THIS DRAWING (QAR NO. SAME AS PART NO.)
14. MAXIMUM FORCE TO MOVE PISTON ROD (NO LOAD): 25 LBS FULL EXTENSION TO FULL RETRACTION



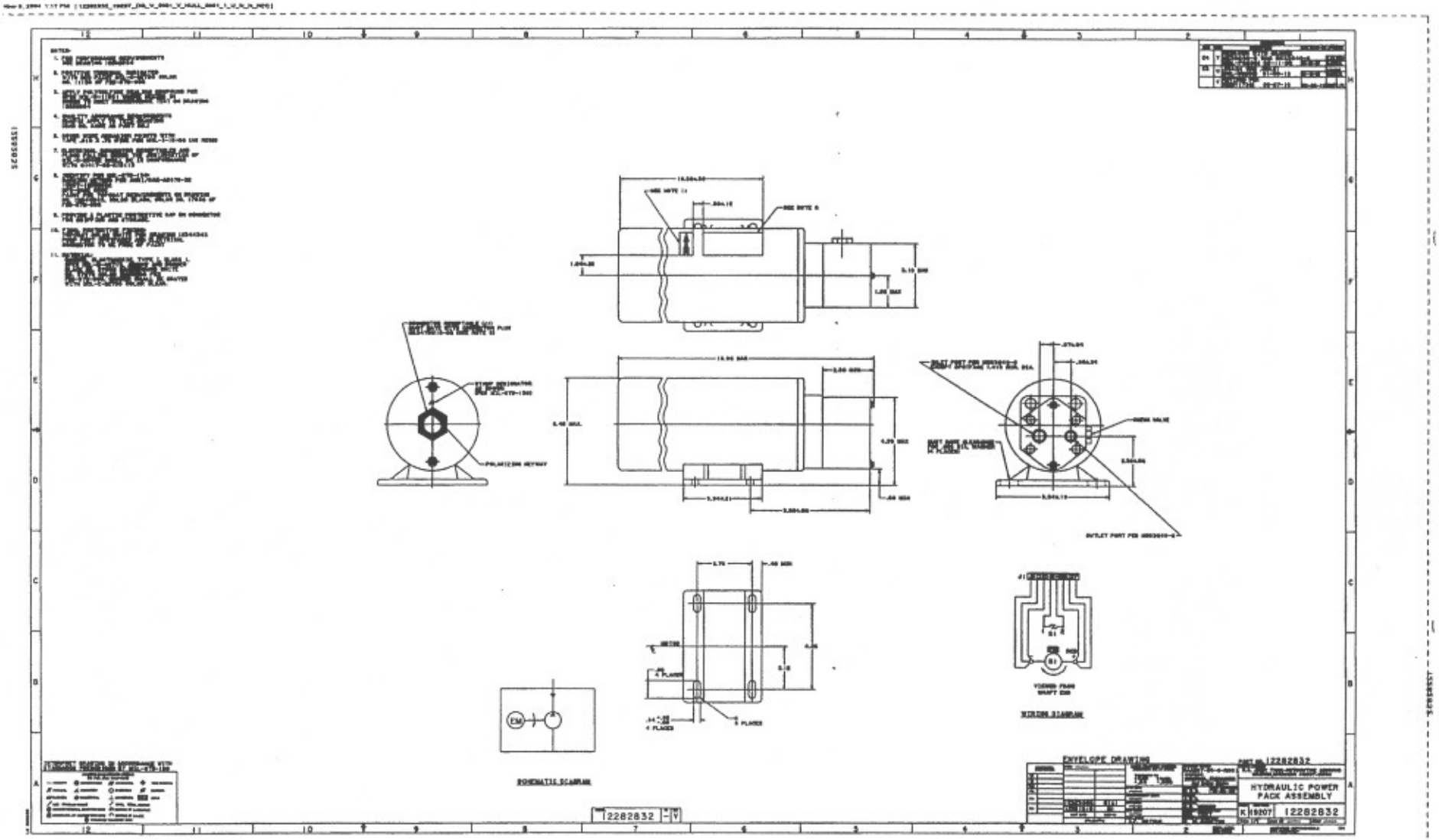
ENVELOPE DRAWING

PART NO. 12310541

HYDRAULIC ACTUATOR AMMO DOOR

E 19207 12310541

12310541


ENVELOPE DRAWING
HYDRAULIC POWER PACK ASSEMBLY
12282832

NOTES:

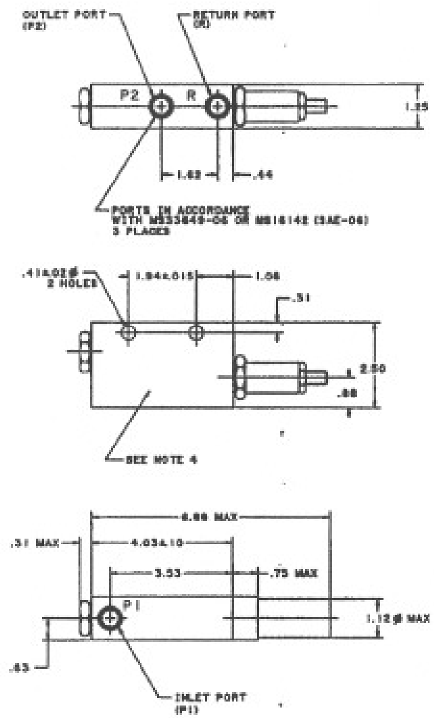
1. DRAWING TO BE INTERPRETED IN ACCORDANCE WITH STANDARDS PRESCRIBED BY DOD-STD-100
2. THE ASSEMBLY SHALL PERFORM AS SPECIFIED HERE ON WHEN USED WITH FLUID CONFORMING TO MIL-H-46170 AT 125°-425°F
3. THE ASSEMBLY SHALL NOT EXCEED 2 LBS.
4. ITEM IDENTIFICATION MARKING METHOD PER ANSI/SAE-AS478-SA [illegible] MIL-STD-130 (19200-SEE TABLE) MFR- MANUFACTURER'S CASE CODE PART NO.
5. RATED OPERATION PRESSURE:
   A. OPERATING: 1000-3000 PSI
   B. PROOF: 4500 PSI
   C. MIN BURST: 7500 PSI
6. OPERATION:
   A. WITH PRESSURE INCREASING FROM 0 PSI AT PORT P1, AT 1250 PSIG AT P1 AND 0 PSIG AT P2, THE FLOW SHALL BE LESS THAN 0.5 GPM, AND WITH 1450±50 PSIG AT P1 AND 0 PSIG AT P2, THE FLOW SHALL BE 1.25 GPM MINIMUM
   B. WITH PRESSURE APPLIED TO PORT P2, FLOW FROM P2 TO P1 SHALL BE 1 GPM MINIMUM AT 2540 PSID
7. ENVIRONMENTAL REQUIREMENTS:
   A. OPERATING TEMPERATURE: THE ASSEMBLY SHALL MEET THE PERFORMANCE REQUIREMENTS OF NOTE 6 AT -25°F FLUID AND AMBIENT TEMPERATURES (EXCEPT FLOW SHALL BE 0.75 GPM MINIMUM IN 6.A. AND PRESSURE DROP SHALL BE 50±10 PSID IN 6.B.) AND AT +275°F FLUID AND +140°F AMBIENT TEMPERATURES.)
   B. VIBRATION: THE ASSEMBLY SHALL MEET THE PERFORMANCE REQUIREMENTS OF NOTE 6 DURING AND AFTER EXPOSURE TO SINUSOIDAL VIBRATION OF THE MAGNITUDE AND FREQUENCIES SPECIFIED:

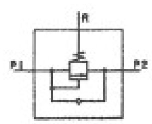
AXIS	FREQUENCY(Hz)	AMPLITUDE
LATITUDINAL AND LONGITUDINAL	5 TO 500	±1g
VERTICAL	5 TO 25 25 TO 36 36 TO 500	±1g 0.030in.D.A ±2g

   C. BASIC SHOCK: THE ASSEMBLY SHALL MEET THE PERFORMANCE REQUIREMENTS OF NOTE 6 AFTER EXPOSURE TO SHOCK IMPULSES OF 30±3.0 G, 11±1.1 MILLISECOND (MS) HALF SINE WAVE APPLIED IN EACH DIRECTION OF 3 MUTUALLY PERPENDICULAR AXES.
   D. GUN FIRING SHOCK: THE ASSEMBLY SHALL MEET THE PERFORMANCE REQUIREMENTS OF NOTE 6 AFTER EXPOSURE TO SHOCK IMPULSES OF 100±10 G, 1.0±0.1 MILLISECOND (MS) HALF SINE WAVE APPLIED IN EACH DIRECTION OF 3 MUTUALLY PERPENDICULAR AXES.
   E. BALLISTIC SHOCK: THE ASSEMBLY SHALL MEET THE PERFORMANCE REQUIREMENTS OF NOTE 6 AFTER EXPOSURE TO SHOCK IMPULSES OF 200±20 G, 0.5±0.1 MILLISECOND (MS) HALF SINE WAVE APPLIED IN EACH DIRECTION OF 3 MUTUALLY PERPENDICULAR AXES.
   F. HIGH INTENSITY SHOCK: THE ASSEMBLY SHALL REMAIN INTACT AND SHALL NOT BECOME A SECONDARY PROJECTILE WHEN EXPOSURE TO SHOCK IMPULSES OF 980±98 G, 0.3±0.1 MILLISECOND (MS) HALF SINE WAVE APPLIED IN EACH DIRECTION OF 3 MUTUALLY PERPENDICULAR AXES.
8. ENDURANCE:
   THE ASSEMBLY SHALL OPERATE FOR 30,000 CYCLES WITH PRESSURE FROM 0 TO 1650±50 PSIG APPLIED ALTERNATELY AT PORT P1 AND RETURN PORT AT A RATE NOT TO EXCEED 1 CYCLE PER SECOND.
9. CLEANLINESS:
   EFFLUENT FLUID FROM THE ASSEMBLY SHALL MEET CLEANLINESS LEVEL 200 PER MIL-STD-1246 WHEN USING INFLUENT FLUID THAT MEETS THIS REQUIREMENT.
10. FINAL PROTECTIVE FINISH:
    FINISH 7.2.1 OF MIL-STD-171
11. QUALITY ASSURANCE REQUIREMENTS (QAR'S) APPLY TO THIS DRAWING. (QAR NO. SAME AS PART NO.)
12. THERE SHALL BE NO EXTERNAL LEAKAGE
13. WITH PRESSURE DECREASING FROM 1600 PSI TO 1050 PSI AT PORT P1 AND PORT P2 PLUGGED, FLOW FROM PORT R SHALL NOT EXCEED 10 CUBIC CENTIMETERS PER MINUTE FOR VALVE 9377604-1.
14. PMIC A
15. IDENTIFICATION OF THE SUGGESTED SOURCE(S) OF SUPPLY IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM(S).

SUGGESTED SOURCE(S) OF SUPPLY				
PART NO.	VENDOR ADDRESS	VENDOR CASE CODE	VENDOR PART NO.	ITEM IDENTIFICATION
9377604-1	FLUID REGULATORS CORP. 313 GILLETTE ST. PAINESVILLE, OH 44077	98938	A3150-05	19200-9377604-1 MFR-98938-A3150-05

16. IN CASE OF CONFLICTING SPECIFICATIONS BETWEEN THOSE DEPICTED ON THIS DRAWING AND THOSE PROVIDED BY MANUFACTURER'S DRAWING/HARDWARE, THE REQUIREMENTS OF THIS DRAWING SHALL TAKE PRECEDENCE.





SCHEMATIC DIAGRAM

PART NUMBER	LEAKAGE REQUIREMENT
9377604	OMIT NOTE 13
9377604-1	SEE NOTE 13

FOR NEW DESIGN WORK AND PROCUREMENT USE PART NO. 9377604-1.

SPECIFICATION CONTROL DRAWING

PART NO. SEE TABLE

VALVE

E 19200 9377604

PERSONAL DAtA QUESTIONNAIRE - (See AR 380-67 for use of this form; proponent is SIOAN-LE)

CONTRACTOR COMPANY NAME (Prime)		WORK PHONE
SUBCONTRACTOR NAME	CONTRACT NUMBER	CONTRACT EXPIRES
INDIVIDUAL'S NAME (First name, Middle name, Last name) ****** NO INITIALS ******		SSN
OTHER NAMES USED (INCLUDE FORMER MARRIED NAMES)		TYPE BADGE/AREA:

DATE OF BIRTH			PLACE OF BIRTH			CITIZENSHIP
MONTH	DAY	YEAR	CITY	COUNTY	STATE	

NOTE IF YOU WERE BORN OUTSIDE OF THE UNITED STATES, YOU MUST FURNISH PROOF OF U.S. CITIZENSHIP UPON SUBMISSION OF THIS FORM TO THIS INSTALLATION. PROOF OF U.S. CITIZENSHIP MUST BE SUBMITTED *IN PERSON* BY THE INDIVIDUAL, ALONG WITH THIS FORM, TO THE OPERATIONS OFFICE, SECURITY MANAGEMENT DIVISION, DLES, LOCATED IN ROOM 10, BUILDING 53.

PHYSICAL DESCRIPTION	COLOR EYES	COLOR HAIR	HEIGHT	WEIGHT	SEX	RACE

DRIVERS LICENSE NO.	STATE OF ISSUE		STATE IDENTIFICATION NO.	STATE OF ISSUE

ADDRESSES FOR THE PAST FIVE (5) YEARS, INCLUDING PRESENT ADDRESS: (STREET, CITY, COUNTY, STATE)

1.	4.
2.	5.
3.	6.

AUTHORITY: Internal Security Act of 1950 (50 USC 797); Executive Order 9397. **PRINCIPAL PURPOSE:** To document information necessary for selection, assignment or termination for persons desiring entry to all, or parts, of Anniston Army Depot or other military installations. **ROUTINE USES:** The information provided will be furnished to the Directorate of Law Enforcement and Security at Anniston Army Depot; to officials within the Department of Defense who have a need for it to perform official business; and to Federal, State, or local agencies that maintain civil, criminal, or law enforcement information. **NATURE OF DISCLOSURE:** Disclosure of the requested information is voluntary. Failure to provide the information, however, may result in being denied unescorted access to the installation.

LEGAL SIGNATURE OF INDIVIDUAL REQUESTING ACCESS:	DATE

********** CERTIFICATION **********

I certify that the individual named above is, in fact, an employee of the company as listed above. I understand that a knowing and willful false statement can be punished by fine or imprisonment, or both. (U.S. Code, Title 18 USC 1001)

SIGNATURE OF AUTHORIZED PERSONNEL/REPRESENTATIVE	DATE

	DISAPPROVED	SIGNATURE OF DISAPPROVING OFFICIAL	DATE

	APPROVED _____ PHOTOGRAPHIC BADGE _____ NON-PHOTOGRAPHIC BADGE - NO ESCORT REQUIRED _____ NON-PHOTOGRAPHIC BADGE - ESCORT REQUIRED		**NO DRIVING PRIVILEGES** Have individual report to the DLES-SM-O **PRIOR** to issuance of a badge.

SIGNATURE OF APPROVING OFFICIAL:	DATE

SIOAN Form 380-2, Rev 31 Aug 99 — PREVIOUS EDITIONS OBSOLETE

ATTACHMENT #2

EVIDENCE OF AUTHORITY TO SIGN OFFERS

Reference the solicitation provision in Section I entitled "Signature Authority." Evidence of the authority of individuals signing offers to submit firm offers on behalf of the Offeror is required except for the owner in the case of sole proprietorships. When Contractor is a corporation, complete this certificate.

CERTIFICATE OF CORPORATE OFFICIAL/AGENT'S AUTHORITY TO BIND CORPORATION

I, Randy Ghaemmaghami, Secretary of Hydraulics International, Inc.
_____, a corporation created and organized under the law of the State of
California, do hereby certify that Jeffrey Riley is an official/agent
of said corporation and is empowered to represent, bind and execute contracts on behalf of said corporation,
subject to the following limitations: None.
(if none, so state)

Witness my hand and the corporate seal of said corporation this 26th day of January, 19 2005

Secretary

(CORPORATE SEAL)

EVIDENCE OF AUTHORITY TO SIGN OFFERS

(Continued)

When Contractor is a Partnership, Unincorporated Firm or a Corporation for which completion of the first statement would be impracticable, complete this certificate:

CERTIFICATE OF AUTHORITY TO BIND PARTNERSHIP

We, the undersigned, comprising the total membership of _____

_____, a partnership/unincorporated firm doing business at

_____,

do hereby certify that _____ is a _____

of said firm and is empowered to represent, bind, and execute contracts on behalf of said partnership/

unincorporated firm.

Witness our signatures, this _____ day of _____, 19____.

Members of Partnership/Unincorporated Firm:

_____ _____

_____ _____

Contractor Request For Waiver
For Non-EPA Comprehensive Guideline Items[1]

Contract No. _____

This form is to be completed by the contractor when items subject to ANAD's Affirmative Procurement (AP) Policy are not purchased. This form is required for all contracts (including services using such items). **NOTE: The Contractor must obtain signature of the Contracting Officer indicating concurrence of the waiver.**

INSTRUCTIONS

1. List the EPA Guideline item(s)[1] not procured, check the appropriate justification(s), provide a written explanation, and sign and date the form.
2. **Obtain Contracting Officer for waiver concurrence.**
3. Submit the original approved form to the Directorate of Contracting and retain copy for Contractor files.
4. The Contracting Officer will provide a copy of the completed signed form to the Directorate of Risk Management Pollution Prevention Program Manager.

EPA Guideline item not purchased below [refer to EPA Guideline Items[1] list]:

Products containing recovered materials and meeting ANAD's AP standards for the above EPA Guideline Items[1] were not obtained because items:

_____ Do not meet all reasonable performance specifications.

_____ Are not available within a reasonable period of time.

_____ Use of minimum content standards would result in inadequate competition.

_____ Products containing recovered materials would require paying a price premium.

5. Written Justification For Not Purchasing EPA Guideline Items[1] (continue on back if necessary):

_____

Contractor Signature Date

6. **CONCURRENCE**_____ **DATE**_____
Contracting Officer

7. **DATE SUBMITTED TO POLLUTION PREVENTION MANAGER**_____

[1] – Also referred to as recovered material content items

Attachment 4

EPA Guideline Items (Recovered Materials Content) List

Paper and Paper Products • Printing and writing paper • Newsprint • Commercial sanitary tissue products • Paperboard and packaging products • Miscellaneous papers	**Transportation Products** • Channelizers • Delineators[1] • Flexible delineators • Parking stops • Traffic barricades • Traffic cones
Vehicular Products • Engine coolants • Re-refined lubricating oils • Retread tires	**Landscaping Products** • Garden and soaker hoses • Hydraulic mulch • Lawn and garden edging • Yard trimmings compost • Food waste compost • Landscaping timbers and posts (plastic lumber)
Construction Products • Building insulation products • Laminated paperboard • Structural fiberboard • Floor tiles (heavy duty or commercial) • Patio blocks • Carpet • Cement and concrete containing fly ash • Cement and concrete containing ground granulated blast furnace slag • Shower and restroom dividers/partitions • Consolidated and reprocessed latex paint • Carpet cushion • Flowable fill • Railroad grade crossings/surfaces	**Non-Paper Office Products** • Binders (paper, plastic covered) • Office recycling containers • Office waste receptacles • Plastic desktop accessories • Plastic envelopes • Plastic trash bags • Printer ribbons • Toner cartridges • Binders (solid plastic) • Plastic clipboards • Plastic clip portfolios • Plastic file folders • Plastic presentation folders
Miscellaneous Products • Pallets • Sorbents • Awards and plaques • Industrial drums • Mats • Signage • Strapping and stretch wrap	**Park and Recreation Products** • Plastic fencing (used for erosion control or as a safety barrier at construction sites) • Playground surfaces • Running tracks • Park and recreational furniture • Playground equipment

List reflect EPA's changes effective as of January 2001

Refer to EPA's Comprehensive Procurement Guideline website for recovered materials content levels - www.epa.gov/cpg.

Attachment 5

CONTRACTOR AFFIRMATIVE PROCUREMENT REPORT FORM FOR ESTIMATION OF RECOVERED MATERIAL CONTENT LEVELS FOR EPA DESIGNATED ITEMS (PER EXECUTIVE ORDER 13101)

CONTRACTOR: _____

CONTRACT/DO #: _____

BLDG # (if applicable): _____

PROJECT MANAGER: _____

INSTRUCTIONS

1. Use this form to document estimation of recovered material content levels per FAR provision 52.223-9, "Certification and Estimate of Percentage of Recovered Material for EPA Designated Items."
2. Complete the table below for those EPA Designated Items used in performance of work under this contract/ delivery order that met or exceeded the minimum materials content levels (see 2nd column in table below). Provide the actual recovered material content (if different from 2nd column) and quantity for these items in the appropriate column, if available.
3. Mark each line with "N/A" for those item/s not used in the performance of this contract/delivery order.
4. Note any exemptions in 5th column for each item for which a Contractor Waiver Form was previously submitted.
5. Submit to the Contracting Officer at the completion of the contract.

RECYCLED OR RECOVERED PRODUCT	TOTAL RECOVERED MATERIALS CONTENT (RMC)	ACTUAL RMC (%)	QUANTITY USED	EXEMPTION (1,2,3)
Rock Wool Insulation	75%			
Fiberglass Insulation	20-25%			
Cellulose loose fill/Spray-on Insulation	75%			
Perlite Composition Board Insulation	23%			
Plastic Rigid Foam Insulation	9%			
Plastic Foam In Place Insulation	5%			
Plastic Foam, Glass Fiber Reinforced Insulation	6%			
Phenolic Rigid Foam Insulation	5%			
Structural Fiber Board	80-100%			
Laminated Paper Board	100%			
Cement/Concrete (FLYASH)	See www.epa.gov/cpg			
High Fly Ash Flowable Fills	95%			
Low Fly Ash Content Flowable Fill	6-14%			
Carpet (PET)	25-100%			
Bonded polyurethane Carpet Cushion	15-50%			
Jute Carpet Cushion	40%			
Synthetic fibers Carpet Cushion	100%			
Rubber Carpet Cushion	60-90%			
Rubber Plastic Patio Blocks	90-100%			
Rubber or Plastic Floor Tile	90-100%			
Steel Restroom Divider/Partition	15%			
Plastic Restroom Divider/Partition	20-100%			

Attachment 6

RECYCLED OR RECOVERED PRODUCT	TOTAL RECOVERED MATERIALS CONTENT (RMC)	ACTUAL RMC (%)	QUANTITY USED	EXEMPTION (1,2,3)
Concrete Railroad Crossing	15-20%			
Rubber Railroad Crossing	85-95%			
Steel Railroad Crossing	25-30% BOF/100%EAF2			
Traffic cones made from PVC, LDPE, crumb Rubber	50-100%			
Traffic Barricades (Type I and II only) made from HDPE, LDPE, PET, steel, fiberglass	100%			
Channelizers, Plastic	25-95%			
Channelizers, rubber base	100%			
Delineators, plastic	25-90%			
Delineators, rubber base	100%			
Delineators, steel base	25-50%			
Flexible plastic delineators	25-85%			
Parking Stops, Plastic or Rubber	100%			
Parking Stops, Concrete containing coal fly ash	20-40%			
Parking Stops, Concrete containing Ground-Granulated Blast Furnace Slag	25-70%			
Playground Surfaces, including rubber or plastic	90-100%			
Plastic Fencing for use to control snow, drifting Sand, or as a safety barrier	90-100%			
Running Tracks. Including rubber or plastic	90-100%			
Plastic Park benches and Picnic Tables	100%			
Plastic composite Park benches and Picnic Tables	100%			
Aluminum Park benches and Picnic Tables	25%			
Concrete Park benches and Picnic Tables	15-40%			
Steel Park benches and Picnic Tables	25-30% BOF/100%EAF			
Plastics Playground Equipment	100%			
Plastic Composites Playground Equipment	95-100%			
Steel Playground Equipment	25-30% BOF/100% EAF			
Aluminum Playground Equipment	25%			
Garden hose, rubber or plastic	60-65% post consumer materials			
Soaker hose, rubber or plastic	60-70% post consumer materials			
Lawn/garden edging, plastic or rubber	30-100%			
Paper-based hydraulic mulch	100%			
Wood-based hydraulic mulch	100%			
Compost Purchase or use compost made from yard trimmings, leaves, grass clippings, and food waste	100%			
HDPE lumber timbers and posts	75-100%			

Attachment 6

RECYCLED OR RECOVERED PRODUCT		TOTAL RECOVERED MATERIALS CONTENT (RMC)	ACTUAL RMC (%)	QUANTITY USED	EXEMPTION (1,2,3)
Mixed plastics/Sawdust lumber timbers and posts		100%			
HDPE/Fiberglass lumber timbers and posts		95%			
Other mixed resins lumber timers and posts		95-100%			
Latex Paint; white, off-white or pastel colors		20%			
Latex Paint; gray, brown, earth-tones, other dark colors		50-99%			
Consolidated Latex Paint (when color and performance doesn't matter)		100%			
Plastic Non-road Signs		80-100%			
Aluminum Signs		25%			
Plastic Sign Posts and Supports		80-100%			
Steel Sign Posts and Supports		25-30% BOF/100%EAF			
Awards and Plaques	Glass	75-100			
	Wood	100%			
	Paper	40-100			
	Plastic and Plastic/ Wood Composite	50-100			

The following exemptions may apply to the non-procurement of recycled/recovered content materials:

1. The product is not available from a sufficient number of sources to maintain a sufficient level of competition (i. e., available from two or more sources) or is not available a reasonable price.
2. The product is not available within a reasonable period of time.
3. The product does not meet the performance standards in applicable specifications to fails to meet reasonable performance standards of the agency.

CERTIFICATION

I hereby certify the Statement of Work/Specifications for the requisition/procurement of all materials listed on this form comply with EPA standards for recycled/recovered materials content.

_____ _____

CONTRACTOR DATE

Attachment 6

CONTRACT DATA REQUIREMENTS LIST

Form Approved
OMB No. 0704-0188

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY TDP _____ TM _____ OTHER _____
D. SYSTEM/ITEM	E. CONTRACT/PR NO.	F. CONTRACTOR

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE	17. PRICE GROUP
A003	Special Inspection Equipment Calibration		18. ESTIMATED TOTAL PRICE

4. AUTHORITY *(Date Acquisition Document No.)*	5. CONTRACT REFERENCE	6. REQUIRING OFFICE
DI-QCIC-81007	Section C, paragraph 6.1	AMSTA-AN-EQ

7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION	14. DISTRIBUTION	b. COPIES		
		1		a. ADDRESSEE	Draft	Final	
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT			Reg	Repro
		365 days ADC					

16. REMARKS

Included as part of A001

a. ADDRESSEE	Draft	Final Reg	Final Repro
See Section F		4	
Deliveries or			
Performance			
15. TOTAL →		4	

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE	17. PRICE GROUP
			18. ESTIMATED TOTAL PRICE

4. AUTHORITY *(Date Acquisition Document No.)*	5. CONTRACT REFERENCE	6. REQUIRING OFFICE

7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION	14. DISTRIBUTION	b. COPIES		
		1		a. ADDRESSEE	Draft	Final	
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT			Reg	Repro

16. REMARKS

a. ADDRESSEE	Draft	Final Reg	Final Repro
15. TOTAL →			

G. PREPARED BY	H. DATE	I. APPROVED BY	J. DATE
Paul G. McCain	11/08/2004	Mark A. Johnson	11/08/2004

ATTACHMENT #7

CONTRACT DATA REQUIREMENTS LIST

Form Approved
OMB No. 0704-0188

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY TDP ____ TM ____ OTHER ____
D. SYSTEM/ITEM	E. CONTRACT/PR NO.	F. CONTRACTOR

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE	17. PRICE GROUP
A001	Commercial-Off-the-Shelf (COTS) Manuals		18. ESTIMATED TOTAL PRICE

4. AUTHORITY (Date Acquisition Document No.)	5. CONTRACT REFERENCE	6. REQUIRING OFFICE
DI-TMSS-80527	Section C, paragraph 6.1	AMSTA-AN-EQ

7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION	14. DISTRIBUTION
		1		a. ADDRESSEE / b. COPIES: Draft / Final Reg / Final Repro
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	
		365 days ADC		

16. REMARKS

Contractor to furnish standard manuals which have been modified to include all requirements of paragraph 6.1.

a. ADDRESSEE	b. COPIES Draft	Final Reg	Final Repro
See Section F		4	
Deliveries or			
Performance			
15. TOTAL →		4	

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE	17. PRICE GROUP
A002	Commercial Drawings and Associated Lists		18. ESTIMATED TOTAL PRICE

4. AUTHORITY (Date Acquisition Document No.)	5. CONTRACT REFERENCE	6. REQUIRING OFFICE
DI-SESS-81003B	Section C, paragraph 6.1	AMSTA-AN-EQ

7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION	14. DISTRIBUTION
		1		a. ADDRESSEE / b. COPIES: Draft / Final Reg / Final Repro
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	
		365 days ADC		

16. REMARKS

Included as part of A001.

a. ADDRESSEE	b. COPIES Draft	Final Reg	Final Repro
See Section F		4	
Deliveries or			
Performance			
15. TOTAL →		4	

G. PREPARED BY	H. DATE	I. APPROVED BY	J. DATE
Paul G. McCain	11/08/2004	Mark A. Johnson	11/08/2004

DATA ITEM DESCRIPTION

Form Approved
OMB No. 0704-0188

1. TITLE	2. IDENTIFICATION NUMBER
Commercial Off-the-Shelf (COTS) Manual and Associated Supplemental Data	DI-TMSS-80527A

3. DESCRIPTION / PURPOSE

A COTS manual contains technical information on the assembly, installation, operation, parts, and maintenance of commercial equipment. this type of manual is published by the manufacturer and furnished to the purchaser usually at no cost.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
052197	A/AMXLS-AP		

7. APPLICATION / INTERRELATIONSHIP

1. This data item is invoked when it has been determined that the manufacturer's manual is acceptable, as published or with minor changes, for Government use.

2. This data item description is to be used to acquire acceptable commercial off-the-shelf manuals or to acquire supplemental data.

3. This data item description supersedes DI-TMSS-80527 and DI-TMSS-80528.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		A7233

10. PREPARATION INSTRUCTIONS

1. The manual shall contain all technical information on the assembly, installation, operation, parts, and maintenance of commercial equipment.

2. The manual may be supplemented with existing data to comply with the contract.

3. The basic manual shall be in the contractor's format. Supplemental data shall be in the format specified by the contracting activity. MIL-HDBK-1221 may be used as guidance.

4. The manual and supplemental data shall be clearly legible and on paper of sufficient quality for long term use.

11. DISTRIBUTION

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

ATTACHMENT #8

DATA ITEM DESCRIPTION

Title: COMMERCIAL DRAWINGS AND ASSOCIATED LISTS

Number: DI-SESS-81003B
ASMC Number: A7432
DTIC Applicable:
Office of Primary Responsibility: AR
Applicable Forms:
Use/relationship: Commercial Drawings and Associated Lists define commercial items acquired by the Department of Defense.

Approval Date: 20011214
Limitation:
GIDEP Applicable:

a. This Data Item Description (DID) contains the format and content preparation instructions for Commercial Drawings and Associated Lists resulting from the work task described in 3.6.4 of MIL-DTL-31000B.

b. This DID is applicable to acquisitions of military systems, equipment, and components. Its use is limited by the requirements of the Defense Federal Acquisition Regulation Supplement, Subpart 227. Before acquiring Commercial Drawings and Associated Lists, the acquiring activity should evaluate the contractor's drawing package and engineering documentation practices to determine if the data will be satisfactory for the Government's intended uses.

c. This DID should be tailored to the minimum data requirements of the applicable contract or purchase order.

d. This DID supersedes DI-DRPR-81003A, which superseded DI-DRPR-81003 and DI-CMAN-80784.

e. This DID is related to DI-SESS-81000B, DI-SESS-81001B, and DI-SESS-82002B.

Requirements:

1. Reference Documents. The applicable issue of documents cited herein, including their approval dates and the dates of applicable amendments, notices, and revisions, shall be as cited in the contract.

2. General. Commercial Drawings and Associated Lists shall be in accordance with MIL-DTL-31000B and the TDP Option Selection Work Sheet incorporated into the contract or purchase order.

3. Format. Drawings and associated lists shall be in the contractor's or original supplier's format.

4. Content. Commercial Drawings and Associated Lists shall provide sufficient information to permit Government maintenance, modification, and engineering analysis of commercial items.

DI-QCIC-81007 QC ■ 9999989 0000360 T ■

DATA ITEM DESCRIPTION

Form Approved
OMB No. 0704-0188

1. TITLE	2. IDENTIFICATION NUMBER
SPECIAL INSPECTION EQUIPMENT CALIBRATION PROCEDURES	DI-QCIC-81007

3. DESCRIPTION / PURPOSE

3.1 A Special Inspection Equipment Calibration Procedure (CP) describes the requirements and procedures for calibrating special inspection or special test equipment (SIE) as individual pieces of equipment or as a system or group of equipments.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
890911	DO		

7. APPLICATION / INTERRELATIONSHIP

7.1 This Data Item Description (DID) contains the format and content preparation instructions for CPs resulting from the work task described by 3.6.8 of MIL-T-31000

7.2 This DID is applicable to acquisitions of military systems, equipments, and components that require the use of SIE to achieve the engineering requirements of the item.

(Continued on sheet 2)

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		D4823

10. PREPARATION INSTRUCTIONS

10.1 Reference documents. The applicable issue of the documents cited herein, including their approval dates and the dates of applicable amendments and revisions, shall be as cited in the contract or purchase order.

10.2 General. CPs shall meet the requirements of MIL-T-31000.

10.3 Content. CPs shall specify each SIE characteristic to be calibrated; the acceptable tolerances for these characteristics; the calibration equipment to be used; the measurement standards to be used; and the applicable parameters, ranges, and accuracies of the measurement standards. CPs shall provide instructions as to how each instrument characteristic or measurement parameter is to be calibrated.

10.4 Format. Each CP will have a cover sheet, a first page, a list of effective pages, and four sections of text.

(Continued on page 2)

11. DISTRIBUTION STATEMENT

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Block 7. APPLICATION / INTERRELATIONSHIP (Continued)

7.3 This DID supersedes DI-CMAN-80787.

7.4 This DID is related to DI-DRPR-81004, "Special Inspection Equipment Drawings and Associated Lists"; DI-QCIC-81005, "Special Inspection Equipment Operating Instructions"; DI-QCIC-81006, "Special Inspection Equipment Descriptive Documentation"; and DI-R-7064, "Calibration System Description".

Block 10. PREPARATION INSTRUCTIONS (continued)

10.4.1 Heading and Title. The heading of each CP shall consist of the words "Equipment Calibration Procedure". The title shall be the nomenclature of the SIE to which the CP applies.

10.4.2 Cover sheet. The cover sheet shall contain the heading and title.

10.4.3 First page. The first page of the CP shall contain the heading and title, and the issuance, approval and change record.

10.4.4 Effective pages. The list of effective pages shall identify each active page of the CP by page number and page revision level.

10.5 Sections. The content of the CP shall be specified in sections and subsections numbered and titled as follows:

10.5.1 Section 1. The first section of the CP shall be numbered and identified as: "1. Introduction.".

10.5.1.1 Scope. The first subsection of the Introduction shall be identified as "1.1 Scope". It shall contain a statement that the CP prescribes the requirements for periodic calibration of the unit or system of SIE and identify the equipment by its nomenclature and part number.

10.5.1.2 Applicability. The second subsection of the Introduction shall be identified as "1.2 Applicability". It shall identify the SIE to be calibrated and any conditions which limit the applicability of the procedure.

10.5.1.3 Calibration Interval. The third subsection of the Introduction shall be identified as "1.3 Calibration Interval". It shall the specify the intervals at which the SIE must be calibrated.

10.5.1.4 Pre-calibration requirements. The fourth subsection of the Introduction shall be identified as "1.4 Pre-calibration requirements". It shall identify any requirements that must be met before the calibration procedure is started. Examples of pre-calibration requirements are the separate calibration of commercial equipment which is part of (or supplied with) the SIE to which the CP applies, and calibration of external equipment, such as transfer standards required to perform the calibrations.

10.5.1.5 Authorized Adjustments and Sequence. The fifth subsection of the Introduction shall be identified as "1.5 Authorized Adjustments and Sequences". It shall identify any adjustments that are permitted or prohibited that are not specifically covered in the CP. It shall also identify any restrictions on deviations from the sequence of the operations specified in the CP.

10.5.1.6 Safety precautions. The sixth subsection of the Introduction shall be identified as "1.6 Safety Precautions". It shall identify any preventive measures that must be taken during the calibration procedure to prevent damage or injury to the SIE, calibration personnel, or calibration equipment. This subsection is not a substitute for caution and warning notes that are to be placed in the text coincident with the operations that may pose a hazard to equipment or personnel.

10.5.2 Equipment and Facilities Required. The second section of the CP shall be identified as "2. Equipment and Facilities Required".

10.5.2.1 Major Equipment. The first subsection of Equipment and Facilities Required shall be identified as "2.1 Major Equipment". It shall contain a list of the major items of equipment needed to calibrate the unit or system to which the procedure applies. Examples of these are standard commercial instruments and transfer standards. The SIE to be calibrated and instruments which are part of or supplied with the SIE are not listed in this section.

10.5.2.2. Facilities. The second subsection of Equipment and Facilities Required shall be identified as "2.2 Facilities". It shall contain a list of facilities which are necessary to calibrate the SIE. Examples of facilities are power systems (sources), "clean rooms", and "screen rooms".

10.5.2.3 Miscellaneous. The third subsection of Equipment and Facilities Required shall be identified as "2.3 Miscellaneous". It shall identify any items required to calibrate the SIE that are not covered by 10.5.2.1 or 10.5.2.2 herein. Typical items to be identified are test leads, resistors, test aids, and reference documents.

10.5.3 Initial Conditions. The third section of the CP shall be identified as "3. Initial Conditions". This section shall contain all instructions on all necessary actions which must precede the actual calibration process. Examples of these actions are making preliminary connections, setting controls, and warming up equipment.

10.5.4 Procedure. The fourth section of the CP shall be identified as "4. Procedure". It shall contain instructions covering all of the measurements, adjustments, recording of performance data, and any other operations necessary to complete the calibration procedure. Instructions for constructing calibration curves, charts, patterns and diagrams shall be included when such curves, charts, patterns or diagrams are required for the calibration of the SIE.

TECHNICAL EVALUATION PLAN

TECHNICAL LITERATURE

1. A technical evaluation will be performed on all proposals for the Universal Hydraulic Test Stand. The technical evaluation will consist of two parts: a met/not-met evaluation and a trade-off evaluation.

A. With offer, the offeror shall furnish technical literature that has been used to market the proposed equipment and/or service. The technical literature will be used to technically evaluate the offers and shall show that the proposed equipment meets the minimum requirements of the specification, specifically the technical features shown below:

Section C - DESCRIPTION/SPECS/WORK STATEMENT:

Paragraph 3.1	Subsystems
Paragraph 3.4.6	Fluid temperature control
Paragraph 3.4.11	Cooling system
Paragraph 7.0	Operation, maintenance and calibration training proposed

B. The features required above to be shown in the technical literature are necessary to determine the offeror's technical acceptance. If the offeror's preprinted literature does not show all these features, the offeror may attach a letter or supplemental information to the literature describing those required features. All literature and supplemental information shall be in the US Customary System of Measurements and in the English language.

C. The failure of technical literature to show that the product and/or service offered conforms to the minimum requirements of this solicitation may require rejection of the offer.

2. Secondly, a trade-off evaluation will be performed to determine if the proposed test stand meets the minimum requirement or preferred capability for each of the two technical factors listed in Table 1 below.

3. The technical evaluation rating will be considered slightly more important than past performance, and past performance will be considered slightly more important than price for purposes of contract award.

Table 1.
Universal Hydraulic Test Stand
Technical Trade-Off Factors

Technical Factor (Specification Reference)	Minimum Requirement (Good)	Preferred Capability (Excellent)
Cooling System, if required (Specification Paragraph 3.4.11)	Once-through Water Cooling System	Closed Loop Cooling System/No Cooling Required
Warranty Period (Specification Paragraph 8.1)	One-Year Warranty Period	Two-year Warranty Period

4. Provide a list of five (5) vendors that you have serviced with this type of furnish and installation within the past three (3) years prior to closing of this solicitation. We reserve the right to request proof of this provided service. For each contract provide:

(1) A description of your contract or subcontract (government or commercial). Government contracts
are defined as those of the Federal Government and agencies of state and local government.
(2) Name of contracting activity/commercial firm.
(3) Contact Number.
(4) Contract Type (fixed price or cost reimbursable).
(5) Total Contract Value.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0003	06-Jan-2005	AS2D5043151004	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DOC-ANNISTON ARMY DEPOT DIRECTORATE OF CONTRACTING 7 FRANKFORD AVENUE ANNISTON AL 36201-4199	W911KF	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
Hydraulics International, Inc. 9201 Independence Avenue Chatsworth, CA 91311	X	9A. AMENDMENT OF SOLICITATION NO. W911KF-05-Q-0049
	X	9B. DATED (SEE ITEM 11) 14-Dec-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGE TWO

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
J. A. Riley, Vice President		TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)	1-26-05	BY (Signature of Contracting Officer)	06-Jan-2005

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

(End of Summary of Changes)

The following items are applicable to this modification:

NOTES

The purpose of this amendment is to provide answers to questions submitted by prospective contractors:

The following questions and answers are provided for clarification.

Question: Is the rig intended to run more than one of the subsystems at a time? For example, would there be a test running on the motor test circuit at the same time as there is a load on the main system pressure circuit? Also, would the auxiliary pressure circuit be used at the same time as the main system pressure circuit? I suspect the answer is yes to all, but need to be sure because if all systems can be used simultaneously, the heat exchanger and closed loop cooling systems are much, much larger than if only one system runs at a time.

Answer: The high pressure circuit is not used at the same time as the main pressure. However, the main pressure and the motor to rotating the pump are used at the same time.

2. All other terms and conditions remain unchanged.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 of 5

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0002	20-Dec-2004	A52D5043151004	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DOC-ANNISTON ARMY DEPOT DIRECTORATE OF CONTRACTING 7 FRANKFORD AVENUE ANNISTON AL 36201-4199	W911KF	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
Hydraulics International, Inc. 9201 Independence Avenue Chatsworth, CA 91311	X	9A. AMENDMENT OF SOLICITATION NO. W911KF-05-Q-0049
	X	9B. DATED (SEE ITEM 11) 14-Dec-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:
(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGE TWO

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
J. A. Riley, VIce President	TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED 1-26-05	16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer)	16C. DATE SIGNED 20-Dec-2004

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

1. The purpose of this modification is to add FAR Clauses for Progress Payments and Financing.

a. Add FAR Clause 52.232-13, entitled, "Notice of Progress Payments"as shown below.

b. Add FAR Clause 52.232-14, entitoled, "Notice of Availability of Progress Payments Exclusively for Small Business Concerns" as shown below.

c. Add FAR Clause 52.232-29, entitled, "Terms for Financing of Purchases of Commercial Items" as shown below.

d. Add FAR Clause 52.232-30, entitled, "Installment Payment for Commercial Items" as shown below.

2. The closing date remain the same.

3. All other solicitation terms and conditions remain unchanged.

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

52.232-13 NOTICE OF PROGRESS PAYMENTS (APR 1984)

The need for customary progress payments conforming to the regulations in Subpart 32.5 of the Federal Acquisition Regulation (FAR) will not be considered as a handicap or adverse factor in the award of the contract. The Progress Payments clause included in this solicitation will be included in any resulting contract, modified or altered if necessary in accordance with subsection 52.232-16 and its Alternate I of the FAR. Even though the clause is included in the contract, the clause shall be inoperative during any time the contractor's accounting system and controls are determined by the Government to be inadequate for segregation and accumulation of contract costs.

(End of clause)

52.232-14 NOTICE OF AVAILABILITY OF PROGRESS PAYMENTS EXCLUSIVELY FOR SMALL BUSINESS CONCERNS (APR 1984)

The Progress Payments clause will be available only to small business concerns. Any bid conditioned upon inclusion of a progress payment clause in the resulting contract will be rejected as nonresponsive if the bidder is not a small business concern.

(End of clause)

52.232-29 Terms for Financing of Purchases of Commercial Items. (FEB 2002)

(a) Contractor entitlement to financing payments. The Contractor may request, and the Government shall pay, a contract financing payment as specified elsewhere in this contract when: the payment requested is properly due in accordance with this contract; the supplies deliverable or services due under the contract will be delivered or

performed in accordance with the contract; and there has been no impairment or diminution of the Government's security under this contract.

(b) Special terms regarding termination for cause. If this contract is terminated for cause, the Contractor shall, on demand, repay to the Government the amount of unliquidated contract financing payments. The Government shall be liable for no payment except as provided by the Termination for Cause paragraph of the clause at 52.212-4, Contract Terms and Conditions--Commercial Items.

(c) Security for Government financing. In the event the Contractor fails to provide adequate security, as required in this contract, no financing payment shall be made under this contract. Upon receipt of adequate security, financing payments shall be made, including all previous payments to which the Contractor is entitled, in accordance with the terms of the provisions for contract financing. If at any time the Contracting Officer determines that the security provided by the Contractor is insufficient, the Contractor shall promptly provide such additional security as the Contracting Officer determines necessary. In the event the Contractor fails to provide such additional security, the Contracting Officer may collect or liquidate such security that has been provided and suspend further payments to the Contractor; and the Contractor shall repay to the Government the amount of unliquidated financing payments as the Contracting Officer at his sole discretion deems repayable.

(d) Reservation of rights.

(1) No payment or other action by the Government under this clause shall (i) excuse the Contractor from performance of obligations under this contract, or (ii) constitute a waiver of any of the rights or remedies of the parties under the contract.

(2) The Government's rights and remedies under this clause (i) shall not be exclusive, but rather shall be in addition to any other rights and remedies provided by law or this contract; and (ii) shall not be affected by delayed, partial, or omitted exercise of any right, remedy, power, or privilege, nor shall such exercise or any single exercise preclude or impair any further exercise under this clause or the exercise of any other right, power, or privilege of the Government.

(e) Content of Contractor's request for financing payment. The Contractor's request for financing payment shall contain the following:

(1) The name and address of the Contractor;

(2) The date of the request for financing payment;

(3) The contract number and/or other identifier of the contract or order under which the request is made; and

(4) An appropriately itemized and totaled statement of the financing payments requested and such other information as is necessary for computation of the payment, prepared in accordance with the direction of the Contracting Officer.

(f) Limitation on frequency of financing payments. Contractor financing payments shall be provided no more frequently than monthly. -

(g) Dates for payment. A payment under this clause is a contract financing payment and not subject to the interest penalty provisions of the Prompt Payment Act. The designated payment office will pay approved payment requests within 30 days of submittal of a proper request for payment.

(h) Conflict between terms of offeror and clause. In the event of any conflict between the terms proposed by the offeror in response to an invitation to propose financing terms (52.232-31) and the terms in this clause, the terms of this clause shall govern.

(End of clause)

52.232-30 INSTALLMENT PAYMENTS FOR COMMERCIAL ITEMS. (OCT 1995)

(a) Contractor entitlement to financing payments. The Contractor may request, and the Government shall pay, a contract financing installment payment as specified in this contract when: the payment requested is properly due in accordance with this contract; the supplies deliverable or services due under the contract will be delivered or performed in accordance with the contract; and there has been no impairment or diminution of the Government's security under this contract.

(b) Computation of amounts. Installment payment financing shall be paid to the Contractor when requested for each separately priced unit of supply (but not for services) of each contract line item in amounts approved by the Contracting Officer pursuant to this clause.

(1) Number of installment payments for each contract line item. Each separately priced unit of each contract line item is authorized a fixed number of monthly installment payments. The number of installment payments authorized for each unit of a contract line item is equal to the number of months from the date of contract award to the date one month before the first delivery of the first separately priced unit of the contract line item. For example, if the first scheduled delivery of any separately priced unit of a contract line item is 9 months after award of the contract, all separately priced units of that contract line item are authorized 8 installment payments.

(2) Amount of each installment payment. The amount of each installment payment for each separately priced unit of each contract line item is equal to 70 percent of the unit price divided by the number of installment payments authorized for that unit.

(3) Date of each installment payment. Installment payments for any particular separately priced unit of a contract line item begin the number of months prior to the delivery of that unit that are equal to the number of installment payments authorized for that unit. For example, if 8 installment payments are authorized for each separately priced unit of a contract line item, the first installment payment for any particular unit of that contract line item would be 8 months before the scheduled delivery date for that unit. The last installment payment would be 1 month before scheduled delivery of a unit.

(4) Limitation on payment. Prior to the delivery payment for a separately priced unit of a contract line item, the sum of all installment payments for that unit shall not exceed 70 percent of the price of that unit.

(c) Contractor request for installment payment. The Contractor may submit requests for payment of installment payments not more frequently than monthly, in a form and manner acceptable to the Contracting Officer. Unless otherwise authorized by the Contracting Officer, all installment payments in any month for which payment is being requested shall be included in a single request, appropriately itemized and totaled.

(d) Dates for payment. An installment payment under this clause is a contract financing payment under the Prompt Payment clause of this contract, and except as provided in paragraph (e) of this clause, approved requests shall be paid within 30 days of submittal of a proper request for payment.

(e) Liquidation of installment payments. Installment payments shall be liquidated by deducting from the delivery payment of each item the total unliquidated amount of installment payments made for that separately priced unit of that contract line item. The liquidation amounts for each unit of each line item shall be clearly delineated in each request for delivery payment submitted by the Contractor.

(f) Security for installment payment financing. In the event the Contractor fails to provide adequate security as required in this contract, no financing payment shall be made under this contract. Upon receipt of adequate security, financing payments shall be made, including all previous payments to which the Contractor is entitled, in accordance with the terms of the contract. If at any time the Contracting Officer determines that the security

provided by the Contractor is insufficient, the Contractor shall promptly provide such additional security as the Contracting Officer determines necessary. In the event the Contractor fails to provide such additional security, the Contracting Officer may collect or liquidate such security that has been provided, and suspend further payments to the Contractor; the Contractor shall repay to the Government the amount of unliquidated financing payments as the Contracting Officer at his sole discretion deems repayable.

(g) Special terms regarding termination for cause. If this contract is terminated for cause, the Contractor shall, on demand, repay to the Government the amount of unliquidated installment payments. The Government shall be liable for no payment except as provided by the Termination for Cause paragraph of the clause at 52.212-4, Contract Terms and Conditions--Commercial Items.

(h) Reservation of rights. (1) No payment, vesting of title under this clause, or other action taken by the Government under this clause shall (i) excuse the Contractor from performance of obligations under this contract, or (ii) constitute a waiver of any of the rights or remedies of the parties under the contract.

(2) The Government's rights and remedies under this clause (i) shall not be exclusive, but rather shall be in addition to any other rights and remedies provided by law or this contract, and (ii) shall not be affected by delayed, partial, or omitted exercise of any right, remedy, power, or privilege, nor shall such exercise or any single exercise preclude or impair any further exercise under this clause or the exercise of any other right, power, or privilege of the Government.

(i) Content of Contractor's request for installment payment. The Contractor's request for installment payment shall contain the following:

(1) The name and address of the Contractor;

(2) The date of the request for installment payment;

(3) The contract number and/or other identifier of the contract or order under which the request is made; and

(4) An itemized and totaled statement of the items, installment payment amount, and month for which payment is being requested, for each separately priced unit of each contract line item.

(End of clause)

(End of Summary of Changes)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 4

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0001	16-Dec-2004	A52D5043151004	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DOC-ANNISTON ARMY DEPOT DIRECTORATE OF CONTRACTING 7 FRANKFORD AVENUE ANNISTON AL 36201-4199	W911KF	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
Hydraulics International, Inc. 9201 Independence Avenue Chatsworth, CA 91311	X	9A. AMENDMENT OF SOLICITATION NO. W911KF-05-Q-0049
	X	9B. DATED (SEE ITEM 11) 14-Dec-2004
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGE TWO

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
J. A. Riley, Vice President		TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)	1-26-05	BY (Signature of Contracting Officer)	16-Dec-2004

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

1. The purpose of this amendment is to update FAR Clauses, delete one FAR Clause and correct the Specifications and Technical Evaluation Plan that was attached to the Solicitation.

a. Update FAR Clause 52.212-2, entitled, "Evaluation—Commercial Items (Jan 99) as shown below.

b. Update FAR Clause 52.214-4803, entitled, "Technical Literature (Oct 93) as shown below.

c. Remove the Specifications attached to the Solicitation in its entirety and replace with the attached Specifications.

d. Remove the Technical Evaluation Plan (Attachment #9), attached to the Solicitation in its entirety and replace with the attached Past Performance Evaluation Plan.

2. The closing date remain the same.

3. All other contract terms and conditions remain unchanged.

SUMMARY OF CHANGES

SECTION SF 1449 - CONTINUATION SHEET

The following have been modified:

52.212-2 EVALUATION--COMMERCIAL ITEMS (JAN 1999)

(a) The Government will award a contract resulting from this solicitation to the responsible offeror whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered. The following factors shall be used to evaluate offers:

1. Technical
2. Past Performance
3. Price

Both Technical and Past Performance are trade-off factors. Technical is slightly more important than Past Performance and Past Performance is slightly more important than price. All Evaluation Factors, when combined are significantly more important than Price. Price will be evaluated on reasonableness.

The technical evaluation will consist of two parts: A Met/Not Met and a Trade-Off Evaluation. The trade-off will consist of the following technical factors:

(1) Cooling System, if required:
  (a) A "Good" for a once-through Water Cooling System
  (b) A "Excellent" for Closed Loop Cooling System/No Cooling Required

(2) Warranty Period:
  (a) A "Good" for One-Year Warranty Period
  (b) An "Excellent" for Two-Year Warranty Period

Past Performance will be rated as either, Poor, Good, Excellent, or Neutral. Past Performance sub-factors include (1) Quality-Conformance to specifications, (b) Delivery-Adherence to delivery schedule, (c) Response to request for maintenance/repair, and (d) Availability of spare parts.

NOTE: Offers with no relevant past performance will receive a neutral rating (No Rating).

(b) Options. The Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. The Government may determine that an offer is unacceptable if the option prices are significantly unbalanced. Evaluation of options shall not obligate the Government to exercise the option(s).

(c) A written notice of award or acceptance of an offer, mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer, shall result in a binding contract without further action by either party. Before the offer's specified expiration time, the Government may accept an offer (or part of an offer), whether or not there are negotiations after its receipt, unless a written notice of withdrawal is received before award.

(End of clause)

52.214-4803 TECHNICAL LITERATURE (OCT 1993)

(a) With offer, the offeror shall furnish technical literature that has been used to market the proposed equipment. The technical literature will be used to technically evaluate the offers and shall show that the proposed equipment meets the requirements of the specification, specifically the technical features shown below:

1. A technical evaluation will be performed on all proposals for the Universal Hydraulic Test Stand. The technical evaluation will consist of two parts: a met/not-met evaluation and a trade-off evaluation.

2. With offer, the offeror shall furnish technical literature that has been used to market the proposed equipment and/or service. The technical literature will be used to technically evaluate the offers and shall show that the proposed equipment meets the minimum requirements of the specification, specifically the technical features shown below:

Section C - DESCRIPTION/SPECS/WORK STATEMENT:

Paragraph 3.1 Subsystems
Paragraph 3.4.6 Fluid temperature control
Paragraph 3.4.11 Cooling system
Paragraph 7.0 Operation, maintenance and calibration training proposed

3. The features required above to be shown in the technical literature are necessary to determine the offeror's technical acceptance. If the offeror's preprinted literature does not show all these features, the offeror may attach a letter or supplemental information to the literature describing those required features. All literature and supplemental information shall be in the US Customary System of Measurements and in the English language.

4. The failure of technical literature to show that the product and/or service offered conforms to the minimum requirements of this solicitation may require rejection of the offer.

Table 1.
Universal Hydraulic Test Stand

Technical Trade-Off Factors

Technical Factor (Specification Reference)	Minimum Requirement (Good)	Preferred Capability (Excellent)
Cooling System, if required (Specification Paragraph 3.4.11)	Once-through Water Cooling System	Closed Loop Cooling System/No Cooling Required
Warranty Period (Specification Paragraph 8.1)	One-Year Warranty Period	Two-year Warranty Period

(b) The features required above to be shown in the technical literature are necessary to determine the offeror's technical acceptance. If the offeror's preprinted literature does not show all these features, the offeror may attach a letter or supplemental information to the literature describing those required features. All literature and supplemental information shall be in US Customary System of Measurements and in the English language.

(c) The failure of technical literature to show that the product offered conforms to the requirements of this solicitation may require rejection of the offer.

The following have been deleted:

52.0214-4804 Evaluation Criteria (Oct 93) JUL 1999

(End of Summary of Changes)

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS
OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, AND 30

1. REQUISITION NUMBER: A52D5043151004

PAGE 1 OF 50

2. CONTRACT NO.	3. AWARD/EFFECTIVE DATE	4. ORDER NUMBER	5. SOLICITATION NUMBER	6. SOLICITATION ISSUE DATE
			W911KF-05-Q-0049	14-Dec-2004

7. FOR SOLICITATION INFORMATION CALL:	a. NAME	b. TELEPHONE NUMBER (No Collect Calls)	8. OFFER DUE DATE/LOCAL TIME
	BETH H. HOWARD	256 235-4256	09:00 AM 24 Jan 2005

9. ISSUED BY CODE W911KF

DOC-ANNISTON ARMY DEPOT
DIRECTORATE OF CONTRACTING
7 FRANKFORD AVENUE
ANNISTON AL 36201-4199

TEL:
FAX: 256 235-4618

10. THIS ACQUISITION IS
- [X] UNRESTRICTED
- [ ] SET ASIDE: % FOR
  - [ ] SMALL BUSINESS
  - [ ] HUBZONE SMALL BUSINESS
  - [ ] 8(A)

NAICS: 334519
SIZE STANDARD: 500 EMP

11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED
- [ ] SEE SCHEDULE

12. DISCOUNT TERMS

- [ ] 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)

13b. RATING

14. METHOD OF SOLICITATION
- [X] RFQ
- [ ] IFB
- [ ] RFP

15. DELIVER TO CODE W31G1Y01
ANNISTON ARMY DEPOT
SEE SCHEDULE
ANNISTON AL
TEL: FAX:

16. ADMINISTERED BY CODE

17a. CONTRACTOR/ OFFEROR CODE 56529

Hydraulics International, Inc.
9201 Independence Avenue
Chatsworth, CA 91311

TEL. (818) 998-1231 FACILITY CODE EY9728

18a. PAYMENT WILL BE MADE BY CODE

- [ ] 17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER

18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a. UNLESS BLOCK BELOW IS CHECKED [ ] SEE ADDENDUM

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/ SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	SEE SCHEDULE				

25. ACCOUNTING AND APPROPRIATION DATA

26. TOTAL AWARD AMOUNT (For Govt. Use Only)

- [ ] 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1. 52.212-4. FAR 52.212-3. 52.212-5 ARE ATTACHED. ADDENDA [ ] ARE [ ] ARE NOT ATTACHED
- [ ] 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA [ ] ARE [ ] ARE NOT ATTACHED

28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 COPIES
- [X] TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.

29. AWARD OF CONTRACT: REFERENCE
- [ ] OFFER DATED . YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:

30a. SIGNATURE OF OFFEROR/CONTRACTOR

31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)

31c. DATE SIGNED

30b. NAME AND TITLE OF SIGNER (TYPE OR PRINT)
J. A. Riley
Vice President

30c. DATE SIGNED
1-26-05

31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)

TEL: EMAIL:

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

STANDARD FORM 1449 (REV 4/2002)
Prescribed by GSA
FAR (48 CFR) 53.212

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS (CONTINUED)					PAGE 2 OF 50
19. ITEM NO.	20. SCHEDULE OF SUPPLIES/ SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	SEE SCHEDULE				

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE
	32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE

33. SHIP NUMBER ☐ PARTIAL ☐ FINAL	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT ☐ COMPLETE ☐ PARTIAL ☐ FINAL	37. CHECK NUMBER

38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY

41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY *(Print)*	
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	41c. DATE	42b. RECEIVED AT *(Location)*	
		42c. DATE REC'D *(YY/MM/DD)*	42d. TOTAL CONTAINERS

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

STANDARD FORM 1449 (REV 4/2002) BACK
Prescribed by GSA
FAR (48 CFR) 53.212

Section SF 1449 - CONTINUATION SHEET

NOTES

NOTE: CONTRACTOR MUST PROVIDE A INSTALLATION PLAN 270 DAYS AFTER DATE OF AWARD. CONTRACTOR SHOULD BE PREPARED TO STORE UNIVERSAL HYDRAULIC TEST STAND AT THEIR OWN FACILITY UNTIL SUCH TIME AS BUILDING 117 TO COMPLETE WITH RENOVATIONS. CONTRACTOR WILL BE NOTIFIED 30 DAYS PRIOR TO COMPLETION OF RENOVATIONS TO ARRANGE SHIPMENT. CONTRACTOR SHOULD NOT SHIP UNIVERSAL HYDRAULIC TEST STAND UNTIL CONTRACTOR IS PREPARED TO BEGIN INSTALLATION. CONTRACTOR WILL NOTIFY ANNISTON ARMY DEPOT 14 CALENDAR DAYS PRIOR TO SHIPMENT. CONTRACTOR WILL THEN HAVE 30 DAYSTO COMPLETE INSTALLATION AND TEST STAND ACCEPTANCE REQUIREMENTS PER PARAGRAPH 4.2 IN THE SPECIFICATIONS.

Note # 1 : Offer must be submitted electronically, reference clause 52.000-4706 Electronic Submission of Offers.

Note # 2 : Submit Past Performance information in accordance with clause 52.000-4708, entitled, "Past Performance Proposal and Evaluation Informtion."

Note # 3 : Submit Technical Literature as indicated in 52.214-4803, entitled, "Technical Literature (Oct 93)."

Note # 4 : SITE VISIT: Only one site visit will be conducted. For site visit information please see local clause, 52.237-4710, entitled, "Site Inspection Arrangements."

Note # 5 : The following documents are incorporated as part of this solicitation: (1) Specifications; (2) Personal Data Questionnaire Form 380-2; (3) Evidence of Authority to Sign Offers; (4) Contractor Request for Waiver Non-EPA items; (5) EPA Guideline Items; (6) Contractor Affirmative Procurement Report Form; (7) DD Form 1423; (8) DD Form 1664; (9) Technical Evaluation Plan.

Note # 6 : COR. Contracting Officer's Representative (COR) for this Contract is:

Paul McCain
Anniston Army Depot
Attn: AMSTA-AN-DEQ
7 Frankford Ave, Bldg. 106
Anniston, AL 36201-4199

Note # 7 : Contractor must accept Government Smart Pay Visa Credit Card or provide their electronic funds transfer address. Contractors must be registered in the Central Contractor Registration (CCR) Program before an award will be issued. COMPLETE THE FOLLOWING INFORMATION AND INCLUDE WITH ANY OFFER.

Accept VISA? Yes____ No____

If no, EFT address: National Bank of California
14724 Ventura Blvd.
Sherman Oaks, CA 91403

Federal Tax Identification Number: 95-298-5753
Dun & Bradstreet Number (DUNS): 040370249
CAGE Code: 56529

Central Contractor Registration: Yes X No _____ Expiration Date: 5/27/2005

Vendor Contact Information: POC Jeffrey A. Riley
Telephone: (818) 998-1231, Ext. 106
FAX: (818) 718-2459
Email: jeff@hiinet.com

Note # 8 : AUTHORIZED BUYERS. Any warranted Contracting Officer at the Anniston Army Depot whose warrant authorizes purchases of this type and dollar magnitude is authorized to purchase under this Contract.

Note # 9 : SUBJECT TO AVAILABILITY OF FUNDS.

Note # 10 : The contractor shall comply with Resource Conservation and Recovery Act (RCRA) affirmative procurement (or 'buying recycled') requirements by giving preference in their purchasing process to products and practices that promote recycling and other environmentally friendly practices. The contractor is also responsible for insuring that all sub-contractors comply with ap requirements. Except as specifically waived in writing, for reasons of price, performance or availability, any products in the attached EPA guideline items list provided by the contractor as part of the performance of this contract must meet the minimum percentage levels of recovered materials as specified to these standard contract terms and conditions. Please refer to the attached EPA list of designated recovered materials content products (attached). On completion of work, contractor shall submit to the COR or Contract Administrator a completed "affirmative procurement reporting form" (attached) for actions taken under that specific order.

The contractor shall submit the attached "contractor request for waiver for non-EPA comprehensive guideline items" (attached) as written documentation to support the decision not to acquire items meeting the minimum content levels, based on one of the three justifications below:

a. The product is not available from a sufficient number of sources to maintain a sufficient level of competition (i. e., available from two or more sources) or is not available at a reasonable price.

b. The product is not available within a reasonable period of time.

c. The product does not meet the performance standards in applicable specifications or fails to meet reasonable performance standards of the agency.

See FAR clauses 52.223-4 and 52.223-9 for further guidance.

NOTE # 11 : Completion time includes delivery, installation, successful testing, training and clean-up.

MANDATORY NOTE: CCR REGISTRATION. PLEASE REVIEW THE ACCURACY OF YOUR CENTRAL CONTRACTOR REGISTRATION (CCR) INFORMATION. THE DEPARTMENT OF DEFENSE WILL BEGIN USING A NEW REPORTING SYSTEM IN FISCAL YEAR 2005. THE SYSTEM WILL AUTOMATICALLY

PULL INFORMATION FROM THE CCR. IT IS IMPERATIVE THAT THE INFORMATION FOR YOUR COMPANY IS CORRECTLY RECORDED. AWARDING OF A CONTRACT TO A PARTICULAR COMPANY COULD BE IMPACTED BY THE INFORMATION FOUND AT THE CCR.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		1	Each	$206,734.00	$206,734.00

Universal Hydraulic Test Stand
FFP
FURNISH AND INSTALL MULTIPURPOSE HYDRAULIC COMPONENT TEST STAND IN STRICT ACCORDANCE WITH THE ATTACHED SPECIFICATIONS.
PURCHASE REQUEST NUMBER: A52D5043151004

$206,734.00

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002				NO CHARGE	NO CHARGE

MANUALS
FFP
COMMERCIAL OFF-THE-SHELF MANUALS - 4 ELECTRONIC COPIES OF ALL DOCUMENTATION AND MANUALS ON COMPACT DISCS (CD-ROMs). ELECTRONIC COPIES OF DOCUMENTATION SHALL BE IN MICROSOFT OFFICE FORMAT (WORD, EXCEL) OR ADOBE PORTABLE DOCUMENT FORMAT (PDF). DRAWINGS AND SCEMATICS MAY BE PROVIDED IN PDF, AUTOCAD (.DWG) OR MICROSTATION (.DGN) FORMAT. ALL WILL BE IN ACCORDANCE WITH SPECIFICATIONS, DD FORM 1664. "NOT SEPARATELY PRICED (NSP)".

NO CHARGE

NET AMT

FOB: Destination

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
0001	29-APR-2006	1	ANNISTON ARMY DEPOT SEE SCHEDULE ANNISTON AL FOB: Destination	W31G1Y01
0002	29-APR-2006		(SAME AS PREVIOUS LOCATION) FOB: Destination	W31G1Y01

CLAUSES INCORPORATED BY REFERENCE

52.204-7	Central Contractor Registration	OCT 2003
52.222-1	Notice To The Government Of Labor Disputes	FEB 1997
52.223-4	Recovered Material Certification	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.232-18	Availability Of Funds	APR 1984
52.237-2	Protection Of Government Buildings, Equipment, And Vegetation	APR 1984
52.252-1	Solicitation Provisions Incorporated By Reference	FEB 1998
252.204-7004 Alt A	Required Central Contractor Registration Alternate A	NOV 2003
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.212-7000	Offeror Representations and Certifications- Commercial Items	NOV 1995
252.225-7013	Duty-Free Entry	JAN 2004

CLAUSES INCORPORATED BY FULL TEXT

52.0000-4000 DISCLOSURE OF UNIT PRICE INFORMATION

This constitutes notification pursuant to Executive Order 12600, Pre-Disclosure Notification Procedures for Confidential Commercial Information (June 23, 1987), of our intention to release unit prices in response to any request under the Freedom of Information Act, 5 USC 552. Unit price is defined as the contract price per unit or item purchased. We consider any objection to be waived unless the contracting officer is notified of your objection to such posting prior to submission of initial proposals.

(End of clause)

52.000-4055 NOTICE OF CONTRACT MANAGEMENT

Notwithstanding the Contractor's responsibility for total management responsibility during the performance of this Contract, the administration of the Contract will require maximum coordination between the Government and the Contractor. Upon award of a Contract, the Contracting Officer will appoint a Contracting Officer's Representative as his point of contact.

(a) Contracting Officer's Representative

A COR will be appointed by the Contracting Officer to monitor the Contract for technical compliance and to assist with Contract Administration. The precise responsibility and authority of the COR will be explained in his letter of appointment. The Contractor will be provided a copy of the COR appointment letter.

(b) Contracting Officer

The Contracting Officer is responsible for and will manage all Contract Administration. Accordingly, all communication pertaining to Contract Administration shall be addressed to the Contracting Officer.

52.0000-4200 PLACE AND METHOD OF DELIVERY

All methods of shipment, except rail, will be made to the following address:

ANNISTON ARMY DEPOT
CENTRAL RECEIVING POINT (CRP) BUILDING 513
7 FRANKFORD AVE
ANNISTON, AL 36201-4199

MARKED FOR: CRP – BLDG 513
W911KF-05-

Rail Shipments:

TRANSPORTATION OFFICER
ANNISTON ARMY DEPOT
BYNUM, AL 36253

MARKED FOR: W911KF-05-

(End of clause) December 2004

52.000-4307 SUBMISSION AND PAYMENT OF INVOICE

In consideration of satisfactory performance of the services rendered under this contract, payment will be made to the contractor for work completed upon submission of one copy of a properly completed invoice to the following address:

ANNISTON ARMY DEPOT

7 FRANKFORD AVENUE
BUILDING 221, BETH HOWARD
ANNISTON, AL 36201

Payment will be made by credit card or Defense Finance Accounting Service located at:
Operating Location Rock Island, IL
Phone 309 782-9101
FAX 309 782-9997

(End of clause) Updated August 2004

52.0000-4404 IDENTIFICATION OF CONTRACTOR EMPLOYEES

This requirement is only applicable to the Contractor when the Contractor has employees working on the Anniston Army Depot.

1. All contractors are responsible for obtaining/returning identification badges and/or vehicle decals required for the term of the contract or release of employee (see paragraph 2 on release of Contractor employee). See Local Rules and Regulations clause. All Contractor employees meeting with Government employees or attending meetings at Anniston Army Depot (ANAD) shall, at the beginning of the meeting, announce to all other attendees that they are Contractor employees, employed by (Name of Contractor/address), and the name of all other companies or individuals that currently employ them or that the Contractor employee currently represents. In addition, Contractor employees shall wear visible insignia that readily displays their company's name. This may be in the form of a hat or clothing bearing a company logo, a badge, etc. Also, all Contractor employees must identify themselves as Contractor employees when answering Government telephones, working in situations where their actions could be construed as official Government acts, and include the company's name in his or her email display.

(a) If the Contractor requires computer access for completion of the contract, Contractor shall provide a written request to Directorate of Contracting; the COR will provide the Security Investigation Information or Letter of Clearance to the Personnel Security Office, Directorate of Law Enforcement and Security, ten (10) days prior to the requirement for computer access. If Contractor employees depart Anniston Army Depot **prior to completion of contract**, written notice must be made to Directorate of Contracting and Directorate of Information Management. At the completion of the contract, written notice must be given to Directorate of Contracting AND Directorate of Information Management before final payment will be made.

(b) Contractor must provide written notice to Directorate of Contracting AND Directorate of Law Enforcement and Security when Contractor employees are terminated **before completion of contract**. Written notice shall be provided to the Directorate of Contracting and Directorate of Law Enforcement and Security (DLES) by the Contractor when the contract is complete.

2. Badges and vehicle decals should be returned when they expire at the end of the contract or upon employee termination, whichever comes first. When the contract number under which the badge was obtained is completed (date of last delivery or performance of last service), including any exercise of an option pursuant to the terms of the contract, the Contractor shall return the badges for all employees and vehicle decals to the DLES and obtain a receipt for each within three (3) business days after ending date of contract. Contractor shall provide written notice to Directorate of Contracting, Directorate of Information Management (when access to Government computers required), and DLES when Contractor employees are terminated before the completion of the contract.

3. Failure to comply with the requirement in Paragraph 2 will be grounds for withholding any funds due the Contractor until badges are returned or paid for, notwithstanding any other clause or requirements in the contract. Failure to comply may also be used as an adverse factor with respect to Contractor past performance in connection with award of future contracts to the firm.

4. If the Contractor obtains a new or follow-on contract for work at ANAD, Contractor shall obtain new badges for each employee indicating on the request the new or follow-on contract number and comply with the above. This paragraph does not apply under options.

5. Non-Disclosure Agreement: If access to nonpublic information is required, the Contractor and each Contractor employee working on ANAD shall sign a non-disclosure statement on their company's letterhead prior to commencing work under the contract or obtaining the badges required by Paragraph 1 above. There will be one non-disclosure statement for each employee. The non-disclosure statement shall be worded as stated in Paragraph 7 below.

6. The COR/Government POC shall coordinate the Contractor's badging process (schedule appointments with DLES, etc.). The Contractor shall furnish (before initiating work under the contract) two copies of the non-disclosure statement for each Contractor employee to the COR/Government POC. The COR/Government POC shall maintain one copy and provide one copy to the Administrative Contracting Officer for inclusion in the official contract file.

7. Before any non-government employee can be given access to nonpublic information covered by the non-disclosure agreement, there must be a written agreement between the recipient Contractor and the owner of the proprietary information. A copy of this agreement must be made a part of the contract file.

Format for
CERTIFICATE OF NON-DISCLOSURE

I, _____, an employee, authorized representative, and agent of _____, a contractor (hereinafter RECIPIENT) providing support services to Anniston Army Depot (hereinafter ANAD), and likely to have access to nonpublic information under contract number _____, agree to and promise the following:

WHEREAS RECIPIENT is engaged in delivering support services to ANAD under contract; and

WHEREAS it is the intention of ANAD to protect and prevent access to and disclosure of nonpublic information to anyone other than employees of the United States Government who have a need to know; and

WHEREAS ANAD acknowledges that RECIPIENT will from time to time have or require access to such nonpublic information in the course of delivering the contract services; and

WHEREAS RECIPIENT may be given or otherwise have access to nonpublic information while providing such services; and

WHEREAS "nonpublic information" includes such information as proprietary information (e.g., information submitted by a contractor marked as proprietary), information marked as having restrictions on its use (e.g., data having "limited rights," "restricted rights" or "Government purpose license rights" legends), information having Distribution Statements thereon per DoDD 5230.24, advanced procurement information (e.g., future requirements, statements of work, and acquisition strategies), source selection information (e.g., bids before made public, source selection plans, and rankings of proposals), trade secrets and other confidential business information (e.g., confidential business information submitted by a contractor), attorney work product, information protected by the Privacy Act (e.g., social security numbers, home addresses and telephone numbers), and other sensitive information that would not be released by ANAD under the Freedom of Information Act (e.g., program, planning and budgeting system information);

NOW THEREFORE, RECIPIENT agrees to and promises as follows:

RECIPIENT shall not seek access to nonpublic information beyond what is required for the performance of the support services contract;

RECIPIENT will ensure that his or her status as a contractor employee is known when seeking access to and receiving such nonpublic information from Government employees;

As to any nonpublic information to which RECIPIENT has or is given access, RECIPIENT shall not use or disclose such information for any purpose other than providing the contract support services, and will not use or disclose the information for any personal or other commercial purpose; and

If RECIPIENT becomes aware of any improper release or disclosure of such nonpublic information, RECIPIENT will advise the contracting officer in writing as soon as possible.

The RECIPIENT agrees to return any nonpublic information given to him or her pursuant to this agreement, including any transcriptions by RECIPIENT of nonpublic information to which RECIPIENT was given access, if not already destroyed, upon RECIPIENT leaving the contract.

RECIPIENT understands that any unauthorized use, release or disclosure of nonpublic information in violation of this CERTIFICATE will subject the RECIPIENT and the RECIPIENT's employer to administrative, civil or criminal remedies as may be authorized by law.

RECIPIENT/AGENT: _____ (signature)

PRINTED NAME: J. A. RIley

TITLE: Vice President

EMPLOYER/PRINCIPAL: Hydraulics International, Inc

(End of clause) Updated March 2003

52.000-4408 INSTALLATION SECURITY

The Anniston Army Depot (ANAD) is currently operating on a heightened state of security awareness and enforcement due to possible terrorist threats. Due to this heightened state of security, it is imperative that no unauthorized materials of any type be brought onto or left unattended on the installation. For this reason the Contractor must have a process in place to receive and store materials and have visibility of the location of those materials at all times while on ANAD. This includes construction materials, equipment, and miscellaneous items. This visibility/accountability of materials applies to the Contractor, its subcontractors, and its material suppliers.

Further, all Contractor, subcontractor, and material supplier employees are prohibited from bringing personal belongings of any nature onto the installation if such items are to be left unattended at any time.

The Contractor is further required to have a plan of action for implementing these procedures and must submit it to the Contracting Officer upon request. This plan of action must include a provision for informing all employees and subcontractors of these procedures. The plan of action must also address monitoring and procedures the Contractor has in place to ensure compliance with this contractual provision.

Should the Contractor fail to comply with this mandatory contractual provision, the Contractor may be held responsible for all direct and indirect cost incurred by the Government in identifying, securing, segregating, removing, and otherwise properly disposing of improper or abandoned materials/equipment.

(End of clause)

52.000-4702 AMC-LEVEL PROTEST PROGRAM

If you have complaints about this procurement, it is preferable that you first attempt to resolve those concerns with the responsible contracting officer. However, you can also protest to Headquarters, AMC. The HQ, AMC-Level Protest Program is intended to encourage interested parties to seek resolution of their concerns within AMC as an Alternative Dispute Resolution forum, rather than filing a protest with the General Accounting Office or other external forum. Contract award or performance is suspended during the protest to the same extent, and within the same time periods, as if filed at the GAO. The AMC protest decision goal is to resolve protests within 20 working days from filing. To be timely, protests must be filed within the periods specified in FAR 33.103.

Send protests (other than protests to the contracting officer) by U. S. Postal Service to:
HQ Army Materiel Command
Office of Command Counsel
9301 Chapek Rd, Room 2-1SE3401
Fort Belvoir, VA 22060-5527

Facsimile number (703) 806-8866/8875

Packages sent by Federal Express or UPS should be addressed to:
HQ Army Materiel Command
Office of Command Counsel
Room 2-1SE3401
1412 Jackson Loop
Fort Belvoir, VA 22060-5527

The AMC-level protest procedures are found at:
http://www.amc.army.mil/amc/command_counsel/protest/protest.html

If Internet access is not available, contact the contracting officer or HQ, AMC to obtain the AMC-Level Protest Procedures.

(End of provision) Updated August 2004

52.000-4706 ELECTRONIC SUBMISSION OF OFFERS

All responses to this solicitation must be submitted in digitized format. Paper copy responses will not be accepted. You may submit your response to Anniston Army Depot (ANAD) using email (only to acqnet@anad.army.mil) or fax your offer to our fax modem at telephone number 256 235-4618. Offers submitted using any other means will not be accepted. If format is other than Microsoft Word, Microsoft Excel, Microsoft Access, Microsoft PowerPoint, or Portable Document Format (PDF), a "reader" must be provided. Offeror must insure its offer, in its entirety, reaches the Directorate of Contracting, Anniston Army Depot, before the time set for opening or closing of the solicitation.

Any clauses or provisions of this solicitation which mention writing, returning, or submission of offer will mean electronic submission as stated in the paragraph above.

Electronic offers must identify the solicitation and the opening/closing date, and include, as a minimum, the following:

a. The SF33/SF1449/SF18/SF1442 filled out and signed.

b. All applicable fill-in provisions from the solicitation must be completed.

c. Any other information required by the solicitation.

Lateness rules are outlined in the solicitation.

If you choose to password-protect access to your offer, you must provide the password to ANAD before the opening or closing date. Contact the buyer identified on the cover page of this solicitation to arrange a means of providing the password. Passwords used only for the purpose of write protecting files need not be provided.

Offerors shall make every effort to ensure that their offer is virus-free. Offers (or portions thereof) submitted which DO reflect the presence of a virus, or which are otherwise rendered unreadable by damage in either physical or electronic transit, shall be treated as "unreadable." See Federal Acquisition Regulation 14.406 or 15.207(c) for a description of the steps the Government shall take with regard to unreadable offers.

Any bid bond required by this solicitation must be submitted with offer in the above mentioned electronic format. Also, the properly completed original bid bond must be furnished to the Directorate of Contracting, Anniston Army Depot, 7 Frankford Ave, Anniston, AL 36201-4199, prior to the opening or closing of the solicitation.

52.0000-4708 PAST PERFORMANCE PROPOSAL AND EVALUATION INFORMATION

1. The government will conduct a performance risk evaluation based upon the past performance of offerors and proposed major subcontractors as it relates to the probability of successfully performing the solicitation requirements.

2. Offeror shall submit with proposal the information listed below for RELEVANT PAST PERFORMANCE ON THREE (3) CONTRACTS performed within the past three (3) years prior to closing of this solicitation. For services, contractor shall have performed under each contract for a minimum of one (1) year within the past three (3) years. Each contract cited may be ongoing or complete provided it meets the one year performance criteria. For equipment or supplies, contractor shall have completed each contract within the past three (3) years.

3. For each contract, provide:

a. A description of your contract or subcontract (government or commercial). Government contracts are defined as those with the Federal government and agencies of state and local governments.

b. Name of contracting activity/commercial firm.

c. Contract Number.

d. Contract type (fixed price or cost reimbursable).

e. Total contract value.

f. Description of work/NSN, Part Number, Nomenclature.

g. Contracting officer/contract manager, telephone number, and email address.

h. Administrative contracting officer, if different from g. above, telephone number, and email address.

i. A brief summary of work performed under each contract cited.

j. Explanation of why contract or subcontract is considered relevant to proposed acquisition. If only a portion of cited contract is relevant, include in your explanation.

k. Information on problems encountered on the contract and actions taken to correct problems identified.

4. If offeror proposes use of major subcontractor(s) in performance of resultant contract, provide a description of the work to be performed by each major subcontractor and the information specified above for each subcontractor identified as relevant to the work to be performed by the subcontractor.

5. "Relevant past performance" is defined as performance similar in nature and in scope to work required by this acquisition. The government will screen contract information provided by offeror and will remove from consideration those contract references that are clearly unrelated to the type of effort sought.

6. The government will consider this information in its evaluation of performance risk for offeror and proposed major subcontractors. The government will make a reasonable effort to consider information on the contracts cited for offeror and for each major subcontractor.

a. The government reserves the right to evaluate fewer than three (3) contracts for any contractor should we be unsuccessful in obtaining required information from sources cited. In that case, contractor (or subcontractor) will be evaluated on the information available.

b. Should the government receive information on more than three (3) contracts, selection of those to be considered in evaluation will be based on the criteria stated previously.

7. The government reserves the right to consider information from other sources in its evaluation.

8. See separate evaluation clause for specific factors, rating criteria, and relative importance of past performance evaluation for this acquisition.

(End of provision) Updated August 2003

52.000-4802 NOTICE OF F.O.B. DESTINATION

All offers on this solicitation are requested on an F.O.B. Destination basis.

52.211-4202 TIME OF DELIVERY

(a) The Government requires delivery to be made according to the following schedule:

REQUIRED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN CALENDAR DAYS AFTER DATE OF CONTRACT
0001	1	365 CALENDAR DAYS
0002	NSP	365 CALENDAR DAYS

The Government will evaluate equally, as regards time of delivery, offers that propose delivery of each quantity within the applicable delivery period specified above. The Government reserves the right to award under either the

required delivery schedule or the proposed delivery schedule. If the offeror proposes no other delivery schedule, the required delivery schedule above will apply.

OFFEROR'S PROPOSED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN CALENDAR DAYS AFTER DATE OF CONTRACT
0001	1	300 Calendar Days
0002	NSP	300 Calendar Days

(b) Attention is directed to the Contract Award provision of the solicitation that provides that a written award or acceptance of offer mailed, or otherwise furnished to the successful offeror, results in a binding contract. The Government will mail or otherwise furnish to the offeror an award or notice of award not later than the day award is dated. Therefore, the offeror should compute the time available for performance beginning with the actual date of award, rather than the date the written notice of award is received from the Contracting Officer. However, the Government will evaluate an offer that proposes delivery based on the Contractor's date of receipt of the contract or notice of award by adding one working day if the award is transmitted electronically. The term "working day" excludes weekends and U. S. Federal holidays.)

End of clause Updated June 2004

52.211-4401 LOCAL RULES AND REGULATIONS

(a) Identification Badges and Vehicle Decals: The following requirements apply to all contractors working inside the Controlled Area of Anniston Army Depot.

(1) Contractors are required to secure, and wear at all times, employee identification badges for all employees who must enter the Anniston Army Depot (ANAD) to engage in contract work. Badges must be secured before an employee will be allowed entry onto the depot. Contractors that are non-US citizens must be escorted by depot personnel with the proper security clearance. Emergency badges will be issued on a case-by-case basis. Vehicle decals must be obtained for all Contractor vehicles entering ANAD. These badges and decals may be obtained from the Badge and Vehicle Office, Building 367, located at the main entrance to ANAD. No charge is made for badges if they are returned. Contractors will be charged twenty-five dollars ($25.00) for each badge issued to replace lost badges or badges damaged through carelessness, negligence, or misuse. All persons to be badged shall present a PHOTO identification from one of the following sources:

1 - State driver's license

2 - State identification card

3 - Federal, municipal, or school identification card bearing a seal and the following information: photo, name, social security number, date of birth, and physical description

NOTE: A social security card is not a photo identification and will not be accepted as proper identification. Employee identification cards issued by the Contractor will not be accepted. The Director of Law Enforcement and

Security (DLES) will reject any identification presented which is altered, not issued by one of the above identified agencies, or otherwise questioned regarding validity.

(2) Contractors shall submit the name of a point of contact responsible for security requirements through the Contracting Officer to the Chief, Security Management Division, DLES, upon notification of contract award.

(3) Ten calendar days prior to the date Contractor employee will begin work in the controlled area of ANAD (within the gates), a Personal Data Questionnaire/Privacy Act Statement (SIOAN Form 380-2) must be completed and signed for each employee. The form authorizes ANAD to conduct a local background check for any criminal record or questionable reliability. No contractors or employees will be issued a badge without a favorable local background check. SIOAN Forms 380-2 may only be submitted for persons who are current employees of the Contractor or who hold a letter of intent to hire issued by the Contractor. Forms will be submitted to the Badge and Vehicle Office, Building 367, located at the main entrance to ANAD. NO PRE-EMPLOYMENT LOCAL BACKGROUND CHECKS WILL BE CONDUCTED BY ANNISTON ARMY DEPOT. The prime contractor is responsible for checking with the Badge and Vehicle Office, Building 367, phone number 256 235-6820, to ensure that employees have been cleared for entrance to ANAD.

(4) Also, at least ten calendar days before the Contractor expects to begin work on the installation, prime Contractor shall submit, on company letterhead, the name, social security number, date/place of birth, and citizenship of all persons entering ANAD to perform contract work for the prime and any subcontractors. Letter shall be submitted through the Contracting Officer to the Badge and Vehicle Office.

(5) Violation of any security or safety requirements will be grounds for immediate suspension of the individual's badge. DLES will notify the Contracting Officer when suspension actions are taken. The Contractor can appeal the suspension to DLES, who is the final adjudication authority of the individual's reinstatement or revocation of badge privileges.

(6) See clause entitled Identification of Contractor Employees for Contractor employees working on Anniston Army Depot.

(b) AMMUNITION LIMITED AREA. Yes [ ], No [XX] work to be performed in the Ammunition Limited Area (ALA). Contractors working within the ALA must abide by the above guidance plus the following additional requirements:

(1) The prime Contractor will be notified which persons are approved for access to the ALA. Contractor personnel who are denied access based on the local background check will have the right to appeal to the DLES. The Director's decision is considered the final action.

(2) No privately-owned vehicles (POV) are authorized in the ALA.

(3) Contractor-owned, rented, or leased vehicles which are construction-type (i.e., pickup trucks, dump trucks, etc.) may be authorized within the ALA upon being inspected and registered with ANAD. ALL VEHICLES AND PERSONS SHALL BE SEARCHED UPON ENTERING AND EXITING THE ALA.

(4) Contractor vehicles may not remain overnight within the ALA without obtaining permission from DLES and by disabling the vehicle (by removing the battery or some other method approved by DLES).

(5) No alcohol, photographic equipment, firearms, flame producing devices (to include lighters and matches), or other items prohibited by safety requirements are permitted within the ALA.

(6) All damages caused by the Contractor to security lighting, fencing, intrusion detection systems, security telephones, or any other security equipment will be repaired immediately at the Contractor's expense by the Contractor. Normal contract work will not resume until the security equipment is returned to normal.

(c) CHEMICAL LIMITED AREA. Yes [ ], No [XX] work to be performed in the Chemical Limited Area (CLA). Contractors working within the CLA are required to adhere to all of the requirements of paragraph (a) and (b) above plus the following requirements:

(1) Contractors entering the CLA on a temporary entry control roster are required to attend a safety briefing. The safety briefing, approximately 30 minutes in length, is an annual requirement. Contact DLES at 256 235-7578 to schedule this briefing.

(2) Contractors working within the CLA must be escorted by a member of the security force or an ANAD employee qualified to escort. Escorts remain with the Contractor the entire time the Contractor is within the CLA.

(3) The requirement for a security escort must be coordinated through the Contracting Officer to DLES two weeks in advance of initial required work date. The number of available escorts is limited, which may affect the amount of work area available to the Contractor each day.

(4) Escorts will be conducted with a "line of sight" being maintained at all times between the escort and the Contractor. This will limit the amount of distance one crew may spread out to perform work. Escorts may direct Contractor employees regarding the distance to travel from the escort.

(5) Contractors working within the CLA may be required to cease work and evacuate from the CLA up to six (6) times per year for exercises and/or emergencies. The duration of the cease work periods will vary, but normally they will not exceed 24 hours. These interruptions will be at no cost to the Government.

(6) Contractor work hours within the CLA will be normal ANAD duty days and duty hours. Contractors must depart the CLA 15 minutes prior to the end of ANAD's normal shift.

(d) Hours of Work:

WORK HOURS	RECEIVING HOURS	DAY(S) OF WEEK
7:00 AM - 4:30 PM	7:00 AM - 2:00 PM	Monday - Thursday
7:00 AM - 3:30 PM	7:00 AM - 2:00 PM	Every other Friday
CLOSED	7:00 AM - 2:00 PM	Every other Friday
CLOSED	CLOSED	Saturdays, Sundays, and Federal Holidays

(1) Federal Holidays. Federal holidays may cause the Depot to be closed for one or more of the work days identified. The contract performance period has taken this possibility into consideration.

(2) Shutdown Periods. The Government may choose to shutdown for a week or portions of a week as stated below. During this shutdown, and unless otherwise stated, only those Government personnel essential for equipment/facility maintenance will be permitted work.

4th of July Holiday	Safety Stand-Down Day*
Christmas Holiday	Employee Appreciation Day*

*Safety Stand-Down Day and Employee Appreciation Day generally occur on a Friday (8-hour day). Safety Stand-Down Day consists of either two half-days occurring at six-month intervals or one full workday per year. Employee Appreciation Day generally occurs on a Friday (half of an 8-hour day) and is usually held in the afternoon. The Contractor's services may not be required during these periods. In such cases, the Contractor will be notified in writing by the Government. These interruptions will be at no cost to the Government.

(3) Schedule Changes. When situations warrant, the Government may change the hours of operation to adjust for certain conditions, i.e., weather conditions (extreme heat or cold). For example, during summer production,

shops may begin work at 6:00 am and leave work at 3:30 pm to avoid the afternoon heat. The Contractor shall be provided as much advance written notice as possible when these situations occur and will be expected to support any schedule change provided by the Contracting Officer.

(e) Traffic: The Contractor will be required to conform to Depot regulations concerning:

(1) Designated routes

(2) Parking regulations

(3) Insurance--See clause entitled "Insurance Requirements." The Contractor will also insure that all POVs brought on the installation are fully insured for minimum amount of personal injury and personal damage liability required by Federal Acquisition Regulation 28.307-2.

(f) Highway Barricades, Warning Signs, and Parking: The Contractor shall comply with Depot Regulation ANADR 190-5 and Manual on Uniform Traffic Control Devices, ANSI D6.1, Part VI, Latest Edition. Contractors are permitted to drive their vehicles inside buildings to load and unload supplies and equipment. However, when finished loading and unloading, the Contractor should move the vehicle outside to a designated parking space.

(g) Temporary Structures: The Contractor shall comply with Corps of Engineers Manual (EM) 385-1-1.

(h) Fire Prevention and Protection: The Contractor shall comply with all fire prevention measures prescribed in the installation fire prevention and protection regulation, a copy of which is on file in the office of the Contracting Officer. A written hot work permit shall be obtained from the installation fire department for use of any heat producing devices such as blowtorches, portable furnaces, tar kettles, or gas and electric welding and cutting equipment. The Contractor shall be liable for any fire loss to Government property attributable to negligence on the part of the Contractor, including failure to comply with fire prevention measures prescribed by the terms of this contract.

(i) Utilities: Government-owned and operated utilities are adequate for the needs and use of the Contractor as well as the Government. All reasonably required amounts of water and electricity are available to the Contractor without charge.

(j) Safety and Accident Prevention: In addition to contract clause entitled "ACCIDENT PREVENTION," FAR 52.236-13, which may be incorporated by reference, the provisions of AMCR 385-100, ANADR 385-1, Engineering Manual (EM) 385-1-1, and 29 CFR 1926/1910 shall be strictly adhered to. Contractors working in the CLA will be issued protective masks by the installation in accordance with ANAD Respiratory Screening Plan. The Contractor will be responsible for the reimbursement of the cost of any protective equipment damaged due to negligence, destroyed, or lost by contracted personnel. The referenced regulations and plan are available in the Safety Office for review by contractors.

(k) Vehicle Searches: All vehicles entering, moving throughout, and exiting ANAD are subject to random searches as directed by the Depot Commander.

(l) Land Use Control: Contractors who will be required to "disturb soil" in the performance of this contract shall review and strictly adhere to the Standard Operating Procedure for Land Use Control Implementation. The SOP is available in the Directorate of Risk Management, Building 1, for review by Contractors.

(m) Cellular telephones with built-in cameras are prohibited on this installation. If a cell phone with camera is found, that cell phone is subject to confiscation, and any violation may be punishable by fine or imprisonment or both.

(End of clause) Updated February 2004

52.211-4403 SPECIAL NOTICE TO CONTRACTOR

Final Payment on the contract will be held until contractor has properly cleared with the Security Control Office, the return of all security identification badges and vehicles registration.

(End of clause) December 2003

ADDENDUM TO FAR 52.212-1
INSTRUCTIONS TO OFFERORS-COMMERCIAL ITEMS

52.212-1 (b) (1) THROUGH (10) IS CHANGED TO READ AS FOLLOWS:

1. Complete and return (electronically) one entire copy of solicitation package.
2. Submit Firm Fixed Prices in Schedule of Supplies/Services.
3. Review required delivery schedules in clauses entitled "Time of Delivery" and consider giving expedited delivery schedule.
4. Complete all Representations and Certifications in clauses 52.212-3 and 252.212-7000, entitled "Offeror Representations and Certifications—Commercial Items."
5. Provide evidence of signer's authority to bind the company as stated in paragraph entitled "Signature Authority."
6. Telegraphic and telephonic offers are not authorized. See clause entitled "Electronic Submission of Offers" for submission instructions.
7. Acknowledge all, if any, amendments issued against this solicitation. Acknowledgement of amendments issued prior to quotation closing date must be received in the Directorate of Contracting prior to quotation closing date and time. Acknowledgement of amendments will not be acceptable by telephone or telegraph. Offeror shall use procedures at clause entitled Electronics Submission of Offers for submission of any acknowledgement of an amendment.
8. Provide technical literature as described in clause entitled "Technical Literature." As part of the package please submit the following:

(a) The vendor shall state at time of quotation either "EXCEPTION" or "NO EXCEPTION" to each and every paragraph of the SPECIFICATIONS AND SCOPE OF WORK. Where exception is taken, the degree of noncompliance shall be fully explained. The bid shall clearly indicate any exceptions to, or alternatives to, every part of this specification. Bids shall be arranged similar to this specification and shall reference paragraph numbers for ease of analysis and discussion, if the Government determines discussion to be necessary.

(b) Proposals shall include catalogue pictures, drawings, literature, specifications, installation data and additional information, as applicable, to completely describe the system and its controls, instrumentation, performance, installation, warranty details and training procedures proposed to meet the requirements of this specification.

(c) The proposal shall state detailed space requirements for equipment.

(d) If this specification leaves out any requirements or component parts that would cause the total system to not function properly, manufacturer shall provide such items. If special tools or tooling are required to operate the system, manufacturer shall provide such tools or tooling.

(e) As part of the bid package, manufacturer shall provide a description of all utilities (air, electric, etc.) required for the proper operation of the system. This list shall describe the total system requirements as well as break out of the requirements of the significant components.

(f) As part of the bid package, manufacturer / supplier shall provide a description of all utilities (air, electric, etc.) required during the installation of the system.

9. Furnish copy of Warranty with quotation.

10. Provide past performance information as described in clause "Past Performance Proposal and Evaluation Information" if that clause is included in this solicitation.

ADDENDUM TO 52.212-1c is changed as follows:
Change 30 calendar days to 90 calendar days. The remainder of this paragraph remains the same.

52.212-1 INSTRUCTIONS TO OFFERORS--COMMERCIAL ITEMS (JAN 2004)

(a) North American Industry Classification System (NAICS) code and small business size standard. The NAICS code and small business size standard for this acquisition appear in Block 10 of the solicitation cover sheet (SF 1449). However, the small business size standard for a concern which submits an offer in its own name, but which proposes to furnish an item which it did not itself manufacture, is 500 employees.

(b) Submission of offers. Submit signed and dated offers to the office specified in this solicitation at or before the exact time specified in this solicitation. Offers may be submitted on the SF 1449, letterhead stationery, or as otherwise specified in the solicitation. As a minimum, offers must show--

(1) The solicitation number;

(2) The time specified in the solicitation for receipt of offers;

(3) The name, address, and telephone number of the offeror;

(4) A technical description of the items being offered in sufficient detail to evaluate compliance with the requirements in the solicitation. This may include product literature, or other documents, if necessary;

(5) Terms of any express warranty;

(6) Price and any discount terms;

(7) "Remit to" address, if different than mailing address;

(8) A completed copy of the representations and certifications at FAR 52.212-3;

(9) Acknowledgment of Solicitation Amendments;

(10) Past performance information, when included as an evaluation factor, to include recent and relevant contracts for the same or similar items and other references (including contract numbers, points of contact with telephone numbers and other relevant information); and

(11) If the offer is not submitted on the SF 1449, include a statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation. Offers that fail to furnish required representations or information, or reject the terms and conditions of the solicitation may be excluded from consideration.

(c) Period for acceptance of offers. The offeror agrees to hold the prices in its offer firm for 30 calendar days from the date specified for receipt of offers, unless another time period is specified in an addendum to the solicitation.

(d) Product samples. When required by the solicitation, product samples shall be submitted at or prior to the time specified for receipt of offers. Unless otherwise specified in this solicitation, these samples shall be submitted at no expense to the Government, and returned at the sender's request and expense, unless they are destroyed during preaward testing.

(e) Multiple offers. Offerors are encouraged to submit multiple offers presenting alternative terms and conditions or commercial items for satisfying the requirements of this solicitation. Each offer submitted will be evaluated separately.

(f) Late submissions, modifications, revisions, and withdrawals of offers:

(1) Offerors are responsible for submitting offers, and any modifications, revisions, or withdrawals, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that offers or revisions are due.

(2)(i) Any offer, modification, revision, or withdrawal of an offer received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(A) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of offers; or

(B) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(C) If this solicitation is a request for proposals, it was the only proposal received.

(ii) However, a late modification of an otherwise successful offer, that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(3) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the offer wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(4) If an emergency or unanticipated event interrupts normal Government processes so that offers cannot be received at the Government office designated for receipt of offers by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation or other notice of an extension of the closing date, the time specified for receipt of offers will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(5) Offers may be withdrawn by written notice received at any time before the exact time set for receipt of offers. Oral offers in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile offers, offers may be withdrawn via facsimile received at any time before the exact time set for receipt of offers, subject to the conditions specified in the solicitation concerning facsimile offers. An offer may be withdrawn in person by an offeror or its authorized representative if, before the exact time set for receipt of offers, the identity of the person requesting withdrawal is established and the person signs a receipt for the offer.

(g) Contract award (not applicable to Invitation for Bids). The Government intends to evaluate offers and award a contract without discussions with offerors. Therefore, the offeror's initial offer should contain the offeror's best terms from a price and technical standpoint. However, the Government reserves the right to conduct discussions if

later determined by the Contracting Officer to be necessary. The Government may reject any or all offers if such action is in the public interest; accept other than the lowest offer; and waive informalities and minor irregularities in offers received.

(h) Multiple awards. The Government may accept any item or group of items of an offer, unless the offeror qualifies the offer by specific limitations. Unless otherwise provided in the Schedule, offers may not be submitted for quantities less than those specified. The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit prices offered, unless the offeror specifies otherwise in the offer.

(i) Availability of requirements documents cited in the solicitation. (1)(i) The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29, and copies of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained for a fee by submitting a request to--GSA Federal Supply Service Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.

(ii) If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (i)(1)(i) of this provision. Additional copies will be issued for a fee.

(2) The DoD Index of Specifications and Standards (DoDISS) and documents listed in it may be obtained from the--Department of Defense Single Stock Point (DoDSSP), Building 4, Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Telephone (215) 697-2667/2179, Facsimile (215) 697-1462.

(i) Automatic distribution may be obtained on a subscription basis.

(ii) Order forms, pricing information, and customer support information may be obtained--

(A) By telephone at (215) 697-2667/2179; or

(B) Through the DoDSSP Internet site at http://dodssp.daps.mil.

(3) Nongovernment (voluntary) standards must be obtained from the organization responsible for their preparation, publication, or maintenance.

(j) Data Universal Numbering System (DUNS) Number. (Applies to all offers exceeding $25,000, and offers of $25,000 or less if the solicitation requires the Contractor to be registered in the Central Contractor Registration (CCR) database. The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address. The DUNS +4 is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the offeror to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see FAR Subpart 32.11) for the same parent concern. If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. An offeror within the United States may contact Dun and Bradstreet by calling 1-866-705-5711 or via the internet at http://www.dnb.com. An offeror located outside the United States must contact the local Dun and Bradstreet office for a DUNS number.

(k) Central Contractor Registration. Unless exempted by an addendum to this solicitation, by submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance and through final payment of any contract resulting from this solicitation. If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror. Offerors may obtain information on registration and annual confirmation requirements via the Internet at http://www.ccr.gov or by calling 1-888-227-2423 or 269-961-5757.

(l) Debriefing. If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(1) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(2) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(3) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.

(4) A summary of the rationale for award;

(5) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(6) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(End of provision)

52.212-2 EVALUATION--COMMERCIAL ITEMS (JAN 1999)

(a) The Government will award a contract resulting from this solicitation to the responsible offeror whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered. The following factors shall be used to evaluate offers:

1. Technical Experience
2. Past Performance
3. Price

Both Technical and Past Performance are trade-off factors. Technical Experience is slightly more important the Past Performance and Past Performance iw slightly more important than price. All Evaluation Factors, when combined are significantly more important than Price. Price will be evaluated on reasonableness.

The technical evaluation will consist of two parts: A Met/Not Met and a Trade-Off Evaluation. The trade-off will consist of the following technical factors:

(1) Cooling System, if required:
  (a) A "Good" for a once-through Water Cooling System
  (b) A "Excellent" for Closed Loop Cooling System/No Cooling Required

(2) Warranty Period:
  (a) A "Good" for One-Year Warranty Period
  (b) An "Excellent" for Two-Year Warranty Period

Past Performance will be rated as either, Poor, Good Excellent, or Neutral. Past Performance sub-factors include (1) Quality-Confroamcne to specifications, (b) Delivery=Adherence to delivery schedule, (c) Response to request for maintenance/repair, and (d) Availability of spare parts.

NOTE: Offers with no relevant past performance will receive a neutral rating (No Rating).

(b) Options. The Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. The Government may determine that an offer is unacceptable if the option prices are significantly unbalanced. Evaluation of options shall not obligate the Government to exercise the option(s).

(c) A written notice of award or acceptance of an offer, mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer, shall result in a binding contract without further action by either party. Before the offer's specified expiration time, the Government may accept an offer (or part of an offer), whether or not there are negotiations after its receipt, unless a written notice of withdrawal is received before award.

(End of clause)

52.212-3 OFFEROR REPRESENTATIONS AND CERTIFICATIONS--COMMERCIAL ITEMS (MAY 2004) ALTERNATE I (APR 2002)

(a) Definitions. As used in this provision:

"Emerging small business" means a small business concern whose size is no greater than 50 percent of the numerical size standard for the NAICS code designated.

"Forced or indentured child labor" means all work or service-

(1) Exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or

(2) Performed by any person under the age of 18 pursuant to a contract the enforcement of which can be accomplished by process or penalties.

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern" means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and size standards in this solicitation.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern" means a small business concern--

(1) That is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; or

(2) Whose management and daily business operations are controlled by one or more women.

"Women-owned business concern" means a concern which is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Taxpayer Identification Number (TIN) (26 U.S.C. 6109, 31 U.S.C. 7701). (Not applicable if the offeror is required to provide this information to a central contractor registration database to be eligible for award.)

(1) All offerors must submit the information required in paragraphs (b)(3) through (b)(5) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the Internal Revenue Service (IRS).

(2) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(3) Taxpayer Identification Number (TIN).

_X_ TIN: 95-298-5753

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(4) Type of organization.

___ Sole proprietorship;

___ Partnership;

_X_ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other----------

(5) Common parent.

X Offeror is not owned or controlled by a common parent;

___ Name and TIN of common parent:

Name----------

TIN----------

(c) Offerors must complete the following representations when the resulting contract will be performed in the United States or its outlying areas. Check all that apply.

(1) Small business concern. The offeror represents as part of its offer that it (X) is, ( ) is not a small business concern.

(2) Veteran-owned small business concern. (Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, (X) is not a veteran-owned small business concern.

(3) Service-disabled veteran-owned small business concern. (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (c)(2) of this provision.) The offeror represents as part of its offer that it ( ) is, (X) is not a service-disabled veteran-owned small business concern.

(4) Small disadvantaged business concern. (Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, (X)) is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(5) Women-owned small business concern. (Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.) The offeror represents that it (X) is, ( ) is not a women-owned small business concern.

Note: Complete paragraphs (c)(6) and (c)(7) only if this solicitation is expected to exceed the simplified acquisition threshold.

(6) Women-owned business concern (other than small business concern). (Complete only if the offeror is a women-owned business concern and did not represent itself as a small business concern in paragraph (c)(1) of this provision.) The offeror represents that it ( ) is, a women-owned business concern.

(7) Tie bid priority for labor surplus area concerns. If this is an invitation for bid, small business offerors may identify the labor surplus areas in which costs to be incurred on account of manufacturing or production (by offeror or first-tier subcontractors) amount to more than 50 percent of the contract price:

_____

(8) Small Business Size for the Small Business Competitiveness Demonstration Program and for the Targeted Industry Categories under the Small Business Competitiveness Demonstration Program. (Complete only if the offeror has represented itself to be a small business concern under the size standards for this solicitation.)

(i) (Complete only for solicitations indicated in an addendum as being set-aside for emerging small businesses in one of the four designated industry groups (DIGs).) The offeror represents as part of its offer that it ( ) is, ( ) is not an emerging small business.

(ii) (Complete only for solicitations indicated in an addendum as being for one of the targeted industry categories (TICs) or four designated industry groups (DIGs).) Offeror represents as follows:

(A) Offeror's number of employees for the past 12 months (check the Employees column if size standard stated in the solicitation is expressed in terms of number of employees); or

(B) Offeror's average annual gross revenue for the last 3 fiscal years (check the Average Annual Gross Number of Revenues column if size standard stated in the solicitation is expressed in terms of annual receipts).

(Check one of the following):

Average Annual

Number of Employees Gross Revenues

___ 50 or fewer ___ $1 million or less

___ 51 - 100 ___ $1,000,001 - $2 million

___ 101 - 250 ___ $2,000,001 - $3.5 million

X 251 - 500 ___ $3,500,001 - $5 million

___ 501 - 750 ___ $5,000,001 - $10 million

___ 751 - 1,000 ___ $10,000,001 - $17 million

___ Over 1,000 X Over $17 million

(9) (Complete only if the solicitation contains the clause at FAR 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns or FAR 52.219-25, Small Disadvantaged Business Participation Program-Disadvantaged Status and Reporting, and the offeror desires a benefit based on its disadvantaged status.)

(i) General. The offeror represents that either--

(A) It ( ) is, (X) is not certified by the Small Business Administration as a small disadvantaged business concern and identified, on the date of this representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration (PRO-Net), and that no material change in disadvantaged ownership and control has occurred since its certification, and, where the concern is owned by one or more individuals claiming disadvantaged status, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); or

(B) It ( ) has, (X)(has not submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted.

(ii) Joint Ventures under the Price Evaluation Adjustment for Small Disadvantaged Business Concerns. The offeror represents, as part of its offer, that it is a joint venture that complies with the requirements in 13 CFR 124.1002(f)

and that the representation in paragraph (c)(9)(i) of this provision is accurate for the small disadvantaged business concern that is participating in the joint venture. (The offeror shall enter the name of the small disadvantaged business concern that is participating in the joint venture: _____.)

(10) HUBZone small business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents, as part of its offer, that--

(i) It ( ) is, (X) is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It ( ) is, (X) is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (c)(10)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:_____.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(11) (Complete if the offeror has represented itself as disadvantaged in paragraph (c)(4) or (c)(9) of this provision.) (The offeror shall check the category in which its ownership falls):

____Black American.

____Hispanic American.

____Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians).

____Asian-Pacific American (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China, Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory of the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Hong Kong, Fiji, Tonga, Kiribati, Tuvalu, or Nauru).

____Subcontinent Asian (Asian-Indian) American (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands, or Nepal).

____Individual/concern, other than one of the preceding.

(d) Certifications and representations required to implement provisions of Executive Order 11246--

(1) Previous Contracts and Compliance. The offeror represents that--

(i) It (X) has, ( ) has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the and

(ii) It (X) has, ( ) has not, filed all required compliance reports.

(2) Affirmative Action Compliance. The offeror represents that--

(i) It (X) has developed and has on file, ( ) has not developed and does not have on file, at each establishment, affirmative action programs required by rules and regulations of the Secretary of Labor (41 CFR Subparts 60-1 and 60-2), or

(ii) It ( ) has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(e) Certification Regarding Payments to Influence Federal Transactions (31 U.S.C. 1352). (Applies only if the contract is expected to exceed $100,000.) By submission of its offer, the offeror certifies to the best of its knowledge and belief that no Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with the award of any resultant contract.

(f) Buy American Act--Balance of Payments Program Certificate. (Applies only if the clause at Federal Acquisition Regulation (FAR) 52.225-1, Buy American Act--Balance of Payments Program--Supplies, is included in this solicitation.)

(1) The offeror certifies that each end product, except those listed in paragraph (f)(2) of this provision, is a domestic end product and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States. The offeror shall list as foreign end products those end products manufactured in the United States that do not qualify as domestic end products. The terms ``component,'' ``domestic end product,'' ``end product,'' ``foreign end product,'' and ``United States'' are defined in the clause of this solicitation entitled ``Buy American Act--Supplies.''

(2) Foreign End Products:

Line Item No.:----------
Country of Origin:----------

(List as necessary)

(3) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25.

(g)(1) Buy American Act--Free Trade Agreements--Israeli Trade Act--Balance of Payments Program Certificate. (Applies only if the clause at FAR 52.225-3, Buy American Act--Free Trade Agreements--Israeli Trade Act, is included in this solicitation.)

(i) The offeror certifies that each end product, except those listed in paragraph (g)(1)(ii) or (g)(1)(iii) of this provision, is a domestic end product as defined in the clause of this solicitation entitled ``Buy American Act--Free Trade Agreements--Israeli Trade Act'' and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States.

(ii) The offeror certifies that the following supplies are FTA country end products or Israeli end products as defined in the clause of this solicitation entitled ``Buy American Act--Free Trade Agreements--Israeli Trade Act'':

FTA Country or Israeli End Products

Line Item No.:----------
Country of Origin:----------

(List as necessary)

(iii) The offeror shall list those supplies that are foreign end products (other than those listed in paragraph (g)(1)(ii) of this provision) as defined in the clause of this solicitation entitled ``Buy American Act--Free Trade Agreements--Israeli Trade Act.'' The offeror shall list as other foreign end products those end products manufactured in the United States that do not qualify as domestic end products.

Other Foreign End Products

Line Item No.:----------
Country of Origin:----------

(List as necessary)

(iv) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25.

(2) Buy American Act--Free Trade Agreements--Israeli Trade Act Certificate, Alternate I (JAn 2004). If Alternate I to the clause at FAR 52.225-3 is included in this solicitation, substitute the following paragraph (g)(1)(ii) for paragraph (g)(1)(ii) of the basic provision:

(g)(1)(ii) The offeror certifies that the following supplies are Canadian end products as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act":

Canadian End Products:

Line Item No.

(List as necessary)

(3) Buy American Act-- Free Trade Agreements--Israeli Trade Act Certificate, Alternate II (Jan 2004). If Alternate II to the clause at FAR 52.225-3 is included in this solicitation, substitute the following paragraph (g)(1)(ii) for paragraph (g)(1)(ii) of the basic provision:

(g)(1)(i) The offeror certifies that each end product, except those listed in paragraph (g)(1)(ii) or (g)(1)(iii) of this provision, is a domestic end product and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States. The terms ``component,'' ``domestic end product,'' ``end product,'' ``foreign end product,'' and ``United States'' are defined in the clause of this solicitation entitled ``Buy American Act--Free Trade Agreements--Israeli Trade Act.''

(g)(1)(ii) The offeror certifies that the following supplies are Canadian end products or Israeli end products as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act":

Canadian or Israeli End Products:

Line Item No.

Country of Origin

(List as necessary)

(4) Trade Agreements Certificate. (Applies only if the clause at FAR 52.225-5, Trade Agreements, is included in this solicitation.)

(i) The offeror certifies that each end product, except those listed in paragraph (g)(4)(ii) of this provision, is a U.S.-made, designated country, Caribbean Basin country, or FTA country end product, as defined in the clause of this solicitation entitled ``Trade Agreements."

(ii) The offeror shall list as other end products those end products that are not U.S.-made, designated country, Caribbean Basin country, or FTA country end products.

Other End Products

Line Item No.:----------
Country of Origin:----------

(List as necessary)

(iii) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25. For line items subject to the Trade Agreements Act, the Government will evaluate offers of U.S.-made, designated country, Caribbean Basin country, or FTA country end products without regard to the restrictions of the Buy American Act. The Government will consider for award only offers of U.S.-made, designated country, Caribbean Basin country, or FTA country end products unless the Contracting Officer determines that there are no offers for such products or that the offers for such products are insufficient to fulfill the requirements of the solicitation.

(h) Certification Regarding Debarment, Suspension or Ineligibility for Award (Executive Order 12549). (Applies only if the contract value is expected to exceed the simplified acquisition threshold.) The offeror certifies, to the best of its knowledge and belief, that the offeror and/or any of its principals--

(1) ( ) Are, (X) are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency; and

(2) ( ) Have, (X) have not, within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: Commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, state or local government contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or Commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(3) ( ) Are, (X) are not presently indicted for, or otherwise criminally or civilly charged by a Government entity with, commission of any of these offenses.

(i) Certification Regarding Knowledge of Child Labor for Listed End Products (Executive Order 13126). [The Contracting Officer must list in paragraph (i)(1) any end products being acquired under this solicitation that are included in the List of Products Requiring Contractor Certification as to Forced or Indentured Child Labor, unless excluded at 22.1503(b).]

(1) Listed end products.

Listed End Product

Listed Countries of Origin

---

(2) Certification. (If the Contracting Officer has identified end products and countries of origin in paragraph (i)(1) of this provision, then the offeror must certify to either (i)(2)(i) or (i)(2)(ii) by checking the appropriate block.)

( ) (i) The offeror will not supply any end product listed in paragraph (i)(1) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product.

( ) (ii) The offeror may supply an end product listed in paragraph (i)(1) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product. The offeror certifies that it has made a good faith effort to determine whether forced or indentured child labor was used to mine, produce, or manufacture any such end product furnished under this contract. On the basis of those efforts, the offeror certifies that it is not aware of any such use of child labor.

(End of provision)

ADDENDUM TO FAR 52.212-4 (o), Warranty, is changed in its entirety to read as follows:

The Contractor agrees that the supplies or services furnished under this contract shall be covered by the most favorable commercial warranties the Contractor gives to any customer for such supplies or services and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract.

52.212-4 CONTRACT TERMS AND CONDITIONS-- COMMERCIAL ITEMS (OCT 2003)

(a) Inspection/Acceptance. The Contractor shall only tender for acceptance those items that conform to the requirements of this contract. The Government reserves the right to inspect or test any supplies or services that have been tendered for acceptance. The Government may require repair or replacement of nonconforming supplies or reperformance of nonconforming services at no increase in contract price. The Government must exercise its post-acceptance rights (1) within a reasonable time after the defect was discovered or should have been discovered; and (2) before any substantial change occurs in the condition of the item, unless the change is due to the defect in the item.

(b) Assignment. The Contractor or its assignee may assign its rights to receive payment due as a result of performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency in accordance with the Assignment of Claims Act (31 U.S.C. 3727). However, when a third party makes payment (e.g., use of the Governmentwide commercial purchase card), the Contractor may not assign its rights to receive payment under this contract.

(c) Changes. Changes in the terms and conditions of this contract may be made only by written agreement of the parties.

(d) Disputes. This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613). Failure of the parties to this contract to reach agreement on any request for equitable adjustment, claim, appeal or action arising under or relating to this contract shall be a dispute to be resolved in accordance with the clause at FAR

52.233-1, Disputes, which is incorporated herein by reference. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any dispute arising under the contract.

(e) Definitions. The clause at FAR 52.202-1, Definitions, is incorporated herein by reference.

(f) Excusable delays. The Contractor shall be liable for default unless nonperformance is caused by an occurrence beyond the reasonable control of the Contractor and without its fault or negligence such as, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, unusually severe weather, and delays of common carriers. The Contractor shall notify the Contracting Officer in writing as soon as it is reasonably possible after the commencement or any excusable delay, setting forth the full particulars in connection therewith, shall remedy such occurrence with all reasonable dispatch and shall promptly give written notice to the Contracting Officer of the cessation of such occurrence.

(g) Invoice. (1) The Contractor shall submit an original invoice and three copies (or electronic invoice, if authorized) to the address designated in the contract to receive invoices. An invoice must include--

(i) Name and address of the Contractor;

(ii) Invoice date and number;

(iii) Contract number, contract line item number and, if applicable, the order number;

(iv) Description, quantity, unit of measure, unit price and extended price of the items delivered;

(v) Shipping number and date of shipment, including the bill of lading number and weight of shipment if shipped on Government bill of lading;

(vi) Terms of any discount for prompt payment offered;

(vii) Name and address of official to whom payment is to be sent;

(viii) Name, title, and phone number of person to notify in event of defective invoice; and

(ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision, contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic
Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(2) Invoices will be handled in accordance with the Prompt Payment Act (31 U.S.C. 3903) and Office of Management and Budget (OMB) prompt payment regulations at 5 CFR part 1315.

(h) Patent indemnity. The Contractor shall indemnify the Government and its officers, employees and agents against liability, including costs, for actual or alleged direct or contributory infringement of, or inducement to infringe, any

United States or foreign patent, trademark or copyright, arising out of the performance of this contract, provided the Contractor is reasonably notified of such claims and proceedings.

(i) Payment.--

(1) Items accepted. Payment shall be made for items accepted by the Government that have been delivered to the delivery destinations set forth in this contract.

(2) Prompt payment. The Government will make payment in accordance with the Prompt Payment Act (31 U.S.C. 3903) and prompt payment regulations at 5 CFR part 1315.

(3) Electronic Funds Transfer (EFT). If the Government makes payment by EFT, see 52.212-5(b) for the appropriate EFT clause.

(4) Discount. In connection with any discount offered for early payment, time shall be computed from the date of the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the specified payment date if an electronic funds transfer payment is made.

(5) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(j) Risk of loss. Unless the contract specifically provides otherwise, risk of loss or damage to the supplies provided under this contract shall remain with the Contractor until, and shall pass to the Government upon:

(1) Delivery of the supplies to a carrier, if transportation is f.o.b. origin; or

(2) Delivery of the supplies to the Government at the destination specified in the contract, if transportation is f.o.b. destination.

(k) Taxes. The contract price includes all applicable Federal, State, and local taxes and duties.

(l) Termination for the Government's convenience. The Government reserves the right to terminate this contract, or any part hereof, for its sole convenience. In the event of such termination, the Contractor shall immediately stop all work hereunder and shall immediately cause any and all of its suppliers and subcontractors to cease work. Subject to the terms of this contract, the Contractor shall be paid a percentage of the contract price reflecting the percentage of the work performed prior to the notice of termination, plus reasonable charges the Contractor can demonstrate to the satisfaction of the Government using its standard record keeping system, have resulted from the termination. The Contractor shall not be required to comply with the cost accounting standards or contract cost principles for this purpose. This paragraph does not give the Government any right to audit the Contractor's records. The Contractor shall not be paid for any work performed or costs incurred which reasonably could have been avoided.

(m) Termination for cause. The Government may terminate this contract, or any part hereof, for cause in the event of any default by the Contractor, or if the Contractor fails to comply with any contract terms and conditions, or fails to provide the Government, upon request, with adequate assurances of future performance. In the event of termination for cause, the Government shall not be liable to the Contractor for any amount for supplies or services not accepted, and the Contractor shall be liable to the Government for any and all rights and remedies provided by law. If it is determined that the Government improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

(n) Title. Unless specified elsewhere in this contract, title to items furnished under this contract shall pass to the Government upon acceptance, regardless of when or where the Government takes physical possession.

(o) Warranty. The Contractor warrants and implies that the items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract.

(p) Limitation of liability. Except as otherwise provided by an express warranty, the Contractor will not be liable to the Government for consequential damages resulting from any defect or deficiencies in accepted items.

(q) Other compliances. The Contractor shall comply with all applicable Federal, State and local laws, executive orders, rules and regulations applicable to its performance under this contract.

(r) Compliance with laws unique to Government contracts. The Contractor agrees to comply with 31 U.S.C. 1352 relating to limitations on the use of appropriated funds to influence certain Federal contracts; 18 U.S.C. 431 relating to officials not to benefit; 40 U.S.C. 327, et seq., Contract Work Hours and Safety Standards Act; 41 U.S.C. 51-58, Anti-Kickback Act of 1986; 41 U.S.C. 265 and 10 U.S.C. 2409 relating to whistleblower protections; 49 U.S.C. 40118, Fly American; and 41 U.S.C. 423 relating to procurement integrity.

(s) Order of precedence. Any inconsistencies in this solicitation or contract shall be resolved by giving precedence in the following order: (1) the schedule of supplies/services; (2) the Assignments, Disputes, Payments, Invoice, Other Compliances, and Compliance with Laws Unique to Government Contracts paragraphs of this clause; (3) the clause at 52.212-5; (4) addenda to this solicitation or contract, including any license agreements for computer software; (5) solicitation provisions if this is a solicitation; (6) other paragraphs of this clause; (7) the Standard Form 1449; (8) other documents, exhibits, and attachments; and (9) the specification.

(t) Central Contractor Registration (CCR). (1) Unless exempted by an addendum to this contract, the Contractor is responsible during performance and through final payment of any contract for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(2)(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in FAR subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of subpart 42.12; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (t)(2)(i) of this clause, or fails to perform the agreement at paragraph (t)(2)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(3) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(4) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423 or 269-961-5757.

(End of clause)

52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (OCT 2004)

(a) The Contractor shall comply with the following Federal Acquisition Regulation (FAR) clauses, which are incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

(1) 52.233-3, Protest After Award (AUG 1996) (31 U.S.C. 3553).

(2) 52.233-4, Applicable Law for Breach of Contract Claim (OCT 2004) (Pub. L. 108-77, 108-78).

(b) The Contractor shall comply with the FAR clauses in this paragraph (b) that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items: (Contracting Officer check as appropriate.)

_XX__ (2) 52.219-3, Notice of HUBZone Small Business Set-Aside (Jan 1999) (U.S.C. 657a).

___ (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999) (if the offeror elects to waive the preference, it shall so indicate in its offer) (U.S.C. 657a).

_XX__(4) (i) 52.219-5, Very Small Business Set-Aside (JUNE 2003) (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994).

____(ii) Alternate I (MAR 1999) to 52.219-5.

____(iii) Alternate II to (JUNE 2003) 52.219-5.

___ (5)(i) 52.219-6, Notice of Total Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).

___ (ii) Alternate I (OCT 1995) of 52.219-6.

___ (iii) Alternate II (MAR 2004) of 52.219-6.

___ (6)(i) 52.219-7, Notice of Partial Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).

___ (ii) Alternate I (OCT 1995) of 52.219-7.

___ (iii) Alternate II (MAR 2004) of 52.219-7.

_XX__ (7) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637 (d)(2) and (3)).

___ (8)(i) 52.219-9, Small Business Subcontracting Plan (JAN 2002) (15 U.S.C. 637(d)(4)).

___ (ii) Alternate I (OCT 2001) of 52.219-9

___(iii) Alternate II (OCT 2001) of 52.219-9.

___ (9) 52.219-14, Limitations on Subcontracting (DEC 1996) (15 U.S.C. 637(a)(14)).

___ (10)(i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (JUNE 2003) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer).

___ (ii) Alternate I (JUNE 2003) of 52.219-23.

___ (11) 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

___ (12) 52.219-26, Small Disadvantaged Business Participation Program--Incentive Subcontracting (OCT 2000) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

___ (13) 52.219-27, Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside (May 2004).

_XX__ (14) 52.222-3, Convict Labor (JUNE 2003) (E.O. 11755).

_XX__ (15) 52.222-19, Child Labor--Cooperation with Authorities and Remedies (Jun 2004) (E.O. 13126).

_XX__ (16) 52.222-21, Prohibition of Segregated Facilities (FEB 1999).

_XX__ (17) 52.222-26, Equal Opportunity (APR 2002) (E.O. 11246).

_XX__ (18) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).

_XX__ (19) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

_XX__ (20) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).

_X__ (21)(i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (AUG 2000) (42 U.S.C. 6962(c)(3)(A)(ii)).

___ (ii) Alternate I (AUG 2000) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).

___ (22) 52.225-1, Buy American Act--Supplies (JUNE 2003) (41 U.S.C. 10a-10d).

___ (23)(i) 52.225-3, Buy American Act--Free Trade Agreements--Israeli Trade Act (OCT 2004) (41 U.S.C. 10a-10d, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note, Pub. L. 108-77, 108-78).

___ (ii) Alternate I (JAN 2004) of 52.225-3.

___ (iii) Alternate II (JAN 2004) of 52.225-3.

___ (24) 52.225-5, Trade Agreements (OCT 2004) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).

_XX__ (25) 52.225-13, Restrictions on Certain Foreign Purchases (OCT 2003) (E.o.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of Treasury).

___ (26) 52.225-15, Sanctioned European Union Country End Products (FEB 2000) (E.O. 12849).

___ (27) 52.225-16, Sanctioned European Union Country Services (FEB 2000) (E.O. 12849).

___ (28) 52.232-29, Terms for Financing of Purchases of Commercial Items (FEB 2002) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

____ (29) 52.232-30, Installment Payments for Commercial Items (OCT 1995) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

_XX___ (30) 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration (OCT 2003) (31 U.S.C. 3332).

____ (31) 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration (MAY 1999) (31 U.S.C. 3332).

__XX__ (32) 52.232-36, Payment by Third Party (MAY 1999) (31 U.S.C. 3332).

____ (33) 52.239-1, Privacy or Security Safeguards (AUG 1996) (5 U.S.C. 552a).

____ (34)(i) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631).

____ (ii) Alternate I (APR 2003) of 52.247-64.

(c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items: [Contracting Officer check as appropriate.]

____ (1) 52.222-41, Service Contract Act of 1965, as Amended (MAY 1989) (41 U.S.C. 351, et seq.).

____ (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

____ (3) 52.222-43, Fair Labor Standards Act and Service Contract Act--Price Adjustment (Multiple Year and Option Contracts) (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

____ (4) 52.222-44, Fair Labor Standards Act and Service Contract Act--Price Adjustment (February 2002) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

____ (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreements (CBA) (May 1989) (41 U.S.C. 351, et seq.).

(d) Comptroller General Examination of Record. The Contractor shall comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records--Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes

clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) (1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in paragraphs (i) through (vi) of this paragraph in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause--

(i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds $500,000 ($1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (April 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (December 2001) (38 U.S.C. 4212).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793).

(v) 52.222-41, Service Contract Act of 1965, as Amended (May 1989), flow down required for all subcontracts subject to the Service Contract Act of 1965 (41 U.S.C. 351, et seq.).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (April 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.

(2) While not required, the contractor May include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(End of clause)

52.214-4705 SIGNATURE AUTHORITY

(a) The individual signing this offer must have authority to bind the offeror to a contract. FAR 4.102(a) through (e) require that the contracting officer have specific evidence of the signer's authority to bind the offeror. This evidence of authority is a condition that must be met before the contracting officer can execute any contract resulting from this solicitation.

(b) Offerors must provide evidence, appropriate to their business category, of the signer's authority to bind them on a contract. This evidence may be:

(1) Furnished as an attachment to its offer; or

(2) Identified in its offer by specific reference to an earlier offer submitted to this buying office within the past 12 months, where the signer's authority was confirmed by attachment to that offer; or

(3) Furnished upon receipt of a specific request for the information from the contracting officer. (Note that, per FAR 52.214-12(b) and 52.215-13(b), agents signing on behalf of another offeror must provide evidence of their authority per (b)(1) or (2) above.)

52.214-4803 TECHNICAL LITERATURE (OCT 1993)

(a) With offer, the offeror shall furnish technical literature that has been used to market the proposed equipment. The technical literature will be used to technically evaluate the offers and shall show that the proposed equipment meets the requirements of the specification, specifically the technical features shown below:

1. A technical evaluation will be performed on all proposals for the Universal Hydraulic Test Stand. The technical evaluation will consist of two parts: a met/not-met evaluation and a trade-off evaluation.

2. With offer, the offeror shall furnish technical literature that has been used to market the proposed equipment and/or service. The technical literature will be used to technically evaluate the offers and shall show that the proposed equipment meets the minimum requirements of the specification, specifically the technical features shown below:

Section C - DESCRIPTION/SPECS/WORK STATEMENT:

Paragraph 3.1 Subsystems
Paragraph 3.4.6 Fluid temperature control
Paragraph 3.4.11 Cooling system
Paragraph 7.0 Operation, maintenance and calibration training proposed

3. The features required above to be shown in the technical literature are necessary to determine the offeror's technical acceptance. If the offeror's preprinted literature does not show all these features, the offeror may attach a letter or supplemental information to the literature describing those required features. All literature and supplemental information shall be in the US Customary System of Measurements and in the English language.

4. The failure of technical literature to show that the product and/or service offered conforms to the minimum requirements of this solicitation may require rejection of the offer.

5. Secondly, a trade-off evaluation will be performed to determine if the proposed test stand meets the minimum requirement or preferred capability for each of the two technical factors listed in Table 1 below.

6. The technical evaluation rating will be considered slightly more important than past performance, and past performance will be considered slightly more important than price for purposes of contract award.

Table 1.
Universal Hydraulic Test Stand
Technical Trade-Off Factors

Technical Factor (Specification Reference)	Minimum Requirement (Good)	Preferred Capability (Excellent)

Cooling System, if required (Specification Paragraph 3.4.11)	Once-through Water Cooling System	Closed Loop Cooling System/No Cooling Required
Warranty Period (Specification Paragraph 8.1)	One-Year Warranty Period	Two-year Warranty Period

7. Provide a list of five (5) vendors that you have serviced with this type of furnish and installation within the past three (3) yhears prior to closing of this solicitation. We reserve the right to request proof of this provided service. For each contract provide:

(1) A description of your contract or subcontract (government or commercial). Government contracts are defined as those of the Federal Government and agencies of state and local government.
(2) Name of contracting activity/commercial firm.
(3) Contact Number.
(4) Contract Type (fixed price or cost reimbursable).
(5) Total Contract Value.

(b) The features required above to be shown in the technical literature are necessary to determine the offeror's technical acceptance. If the offeror's preprinted literature does not show all these features, the offeror may attach a letter or supplemental information to the literature describing those required features. All literature and supplemental information shall be in US Customary System of Measurements and in the English language.

(c) The failure of technical literature to show that the product offered conforms to the requirements of this solicitation may require rejection of the offer.

52.214-4804 EVALUATION CRITERIA (OCT 1993)

Award will be made to the responsible offeror whose offer, conforming to the solicitation, will be most advantageous to the Government, considering price and price related factors.

52.215-6 PLACE OF PERFORMANCE (OCT 1997)

(a) The offeror or respondent, in the performance of any contract resulting from this solicitation, ( ) intends, (XX) does not intend (check applicable block) to use one or more plants or facilities located at a different address from the address of the offeror or respondent as indicated in this proposal or response to request for information.

(b) If the offeror or respondent checks "intends" in paragraph (a) of this provision, it shall insert in the following spaces the required information:

Place of Performance(Street Address, City, State, County, Zip Code)	**Name and Address of Owner and Operator of the Plant or Facility if Other Than Offeror or Respondent**

(End of provision)

52.228-4406 INSURANCE REQUIREMENTS (SEP 1998)

In accordance with Insurance--Work on a Government Installation clause, FAR Reference 52.228-5, incorporated herein, the following amounts of insurance are required:

TYPE	MINIMUM AMOUNTS
Workers' Compensation and Employer's Liability	$100,000.00
General Liability, Bodily Injury Liability	$500,000.00 per occurrence
Property Damage Liability	$500,000.00 per occurrence for property damage
Automobile Liability	$200,000.00 per person $500,000.00 per occurrence for bodily injury $ 20,000.00 per occurrence for property damage

A certificate of insurance, showing that the required amounts of insurance have been obtained, will be furnished. Special attention is directed to the cancellation notice of the insurance certificate. The cancellation notice must state:

"In the event that this policy is cancelled or any material change in the policy is made that would adversely affect the interest of the Government, such change or cancellation shall not be effective for such period as may be prescribed by the laws of the state in which this contract is to be performed and in no event sooner than thirty (30) days after written notice thereof to the Contracting Officer."

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

Directorate of Contracting
ATTN: AMSTA-AN-CT (Bldg 221)
Anniston Army Depot
7 Frankford Ave
Anniston, AL 36201-4199

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.237-4416 DEPARTMENT OF DEFENSE PREPAREDNESS TRAINING

This installation is subject to unannounced inspections and exercises that require practice evacuations of certain and/or all areas. Evacuation practices will be temporary in nature. Contractors will be required to participate in these practice evacuation exercises, as necessary, and the contract performance time will be extended to off-set the time lost because of the exercise. This clause should be taken into consideration during the preparation of bids/proposals since, other than appropriate time extensions, participation in such exercises will be at no additional cost to the Government.

52.237-4710 SITE INSPECTION ARRANGEMENTS

Offerors or quoters are urged and expected to inspect the site where the work will be performed.

An organized site visit is planned. Details are listed below. Individual requests for site visits on dates other than that specified below will not be granted.

Organized Site Visit Scheduled For: Date 11 January 2005 Time 1:30 p.m. local time

Offeror/quoters planning to attend the Site Visit must submit on company letterhead the following information for each person attending the site visit:

Company Name:
Name of Visitor:
Date of Birth:
Social Security Number:
Citizenship:
Date of Visit:
Person to be Visited:
Purpose of Visit:

Each visitor must present photo identification as described in Local Clause 52.0211-4401(a)(2) entitled "Local Rules and Regulations."

Send the above information to the attention of Beth Howard either by fax to 256 235-6353 or by email to howarde@anad.army.mil.

Point of contact for the Site Visit is Beth Howard at 256 235-4256 or Theresa Woodard at 256 235-4118.

Participants will meet at Building 221, Directorate of Contracting, Anniston Army Depot, Anniston, AL. Contact Beth Howard by 12:00 p.m. not later than 7 January 2005 if you plan to attend this site visit.

(End of provision) Revised June 2003

52.246-4001 PACKAGING (OCT 1993)

In accordance with ASTM Designation D 3951-90, Standard Practice for Commercial Packaging, material covered by this contract will be acceptable with supplier's "off-the-shelf" or "over-the-counter" packaging providing:

(1) Cleanliness: Items shall be free of dirt and other contaminants which would contribute to deterioration of the item or which would require cleaning by the customer prior to use. Coatings and preservatives applied to the item for protection are not considered contaminants.
(2) Preservation: Items susceptible to corrosion or deterioration shall be provided protection such as preservative coatings, volatile corrosion inhibitors, or desiccated unit packs.
(3) Cushioning: Items requiring protection from physical and mechanical damage or which are fragile in nature shall be protected by wrapping, cushioning, pack compartmentization, cartonizing, or other means to mitigate shock and vibration during handling and shipment.
(4) The quantity per unit pack shall be the same as that used in commercial distribution or over-the-counter retail sales.
(5) The individual items not unit-packed may either be packed in shipping containers or shall comply with the regulations of the carrier used.
(6) The exterior (shipping) containers shall contain a packing list or other documentation setting forth contents and shall be addressed as specified in the "Ship To" portion of this order.
(7) Shipping Containers: The shipping container (including any necessary blocking, bracing, cushioning, and waterproofing) shall comply with the regulations of the carrier used and shall provide safe delivery to the destination.

52.246-4002 MARKING

Unless otherwise specified, exterior packs shall, as a minimum, be marked as follows by any means that provides legibility and durability:
a. National Stock Number (NSN), Management Control Number (MCN), or Part Number.
b. Noun.
c. Quantity, unit, and unit of issue.
d. Contract, Purchase Order, or Delivery Order number.
e. xx This is a Property Book Item.
If e. above is checked, add to marking on packing list. Receiving: Notify Property Book Office at Ext. 6270.
NOTE: When a discount is offered to the Government as consideration for expediting payment, request the face of the packing slip and invoice be annotated "DISCOUNT OFFERED."

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://www.arnet.gov
http://farsite.hill.af.mil
http://www.procnet.anad.army.mil
(Local Links, Reference Library, 13=DFARS, 22=FAR)

(End of clause)

252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) "Definition. Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

252.211-7003 ITEM IDENTIFICATION AND VALUATION (JAN 2004)

(a) Definitions. As used in this clause--

Automatic identification device means a device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.

Commonly accepted commercial marks means any system of marking products for identification that is in use generally throughout commercial industry or within commercial industry sectors. Some examples of commonly accepted commercial marks are: EAN.UCC Global Trade Item Number; Automotive Industry Action Group B-4 Parts Identification and Tracking Application Standard, and B-2 Vehicle Identification Number Bar Code Label Standard; American Trucking Association Vehicle Maintenance Reporting Standards; Electronic Industries Alliance EIA 802 Product Marking Standard; and Telecommunications Manufacturers Common Language Equipment Identification Code.

Concatenated unique item identifier means--

(1) For items that are serialized within the enterprise identifier, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or

(2) For items that are serialized within the original part number, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, original part number, and serial number within the part number.

Data qualifier means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.

DoD recognized unique identification equivalent means a unique identification method that is in commercial use and has been recognized by DoD. All DoD recognized unique identification equivalents are listed at http://www.acq.osd.mil/uid.

DoD unique item identification means marking an item with a unique item identifier that has machine-readable data elements to distinguish it from all other like and unlike items. In addition--

(1) For items that are serialized within the enterprise identifier, the unique identifier shall include the data elements of
issuing agency code, enterprise identifier, and a unique serial number.

(2) For items that are serialized within the part number within the enterprise identifier, the unique identifier shall include the data elements of issuing agency code, enterprise identifier, the original part number, and the serial number.

Enterprise means the entity (i.e., a manufacturer or vendor) responsible for assigning unique item identifiers to items.

Enterprise identifier means a code that is uniquely assigned to an enterprise by a registration (or controlling) authority.

Government's unit acquisition cost means--

(1) For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery; and

(2) For cost-type line, subline, or exhibit line items, the Contractor's estimated fully burdened unit cost to the Government for each item at the time of delivery.

Issuing agency code means a code that designates the registration (or controlling) authority.

Item means a single hardware article or unit formed by a grouping of subassemblies, components, or constituent parts required to be delivered in accordance with the terms and conditions of this contract.

Machine-readable means an automatic information technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.

Original part number means a combination of numbers or letters assigned by the enterprise at asset creation to a class of items with the same form, fit, function, and interface.

Registration (or controlling) authority means an organization responsible for assigning a non-repeatable identifier to an enterprise (i.e., Dun & Bradstreet's Data Universal Numbering System (DUNS) Number, Uniform Code Council (UCC)/EAN International (EAN) Company Prefix, or Defense Logistics Information System (DLIS) Commercial and Government Entity (CAGE) Code).

Serial number within the enterprise identifier or unique serial number means a combination of numbers, letters, or symbols assigned by the enterprise to an item that provides for the differentiation of that item from any other like and unlike item and is never used again within the enterprise.

Serial number within the part number or serial number means a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item within a part number assignment.

Serialization within the enterprise identifier means each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.

Serialization within the part number means each item of a particular part number is assigned a unique serial number within that part number assignment. The enterprise is responsible for ensuring unique serialization within the part number within the enterprise identifier.

Unique item identification means marking an item with machine-readable data elements to distinguish it from all other like and unlike items.

Unique item identifier means a set of data marked on items that is globally unique, unambiguous, and robust enough to ensure data information quality throughout life and to support multi-faceted business applications and users.

Unique item identifier type means a designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at http://www.acq.osd.mil/uid.

(b) The Contractor shall deliver all items under a contract line, subline, or exhibit line item.

(c) Unique item identification.

(1) The Contractor shall provide DoD unique item identification, or a DoD recognized unique identification equivalent, for--

(i) All items for which the Government's unit acquisition cost is $5,000 or more; and

(ii) The following items for which the Government's unit acquisition cost is less than $5,000:

Contract Line, Subline, orExhibit Line Item Number

Item Description

(iii) Subassemblies, components, and parts embedded within items as specified in Exhibit Number or Contract Data Requirements List Item Number .

(2) The unique item identifier and the component data elements of the unique item identifier shall not change over the life of the item.

(3) Data syntax and semantics. The Contractor shall--

(i) Mark the encoded data elements (except issuing agency code) on the item using any of the following three types of data qualifiers, as specified elsewhere in the contract:

(A) Data Identifiers (DIs) (Format 06).

(B) Application Identifiers (AIs) (Format 05), in accordance with ISO/IEC International Standard 15418, Information Technology--EAN/UCC Application Identifiers and ASC MH 10 Data Identifiers and ASC MH 10 Data Identifiers and Maintenance.

(C) Text Element Identifiers (TEIs), in accordance with the DoD collaborative solution ``DD'' format for use until the final solution is approved by ISO JTC1/SC 31. The DoD collaborative solution is described in Appendix D of the DoD Guide to Uniquely Identifying Items, available at http://www.acq.osd.mil/uid; and

(ii) Use high capacity automatic identification devices in unique identification that conform to ISO/IEC International Standard 15434, Information Technology--Syntax for High Capacity Automatic Data Capture Media.

(4) Marking items.

(i) Unless otherwise specified in the contract, data elements for unique identification (enterprise identifier, serial number, and, for serialization within the part number only, original part number) shall be placed on items requiring marking by paragraph (c)(1) of this clause in accordance with the version of MIL-STD-130, Identification Marking of U.S. Military Property, cited in the contract Schedule.

(ii) The issuing agency code--

(A) Shall not be placed on the item; and

(B) Shall be derived from the data qualifier for the enterprise identifier.

(d) Commonly accepted commercial marks. The Contractor shall provide commonly accepted commercial marks for items that are not required to have unique identification under paragraph (c) of this clause.

(e) Material Inspection and Receiving Report. The Contractor shall report at the time of delivery, as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the following information:

(1) Description.*

(2) Unique identifier**, consisting of--

(i) Concatenated DoD unique item identifier; or

(ii) DoD recognized unique identification equivalent.

(3) Unique item identifier type.**

(4) Issuing agency code (if DoD unique item identifier is used).**

(5) Enterprise identifier (if DoD unique item identifier is used).**

(6) Original part number.**

(7) Serial number.**

(8) Quantity shipped.*

(9) Unit of measure.*

(10) Government's unit acquisition cost.*

(11) Ship-to code.

(12) Shipment date.

(13) Contractor's CAGE code or DUNS number.

(14) Contract number.

(15) Contract line, subline, or exhibit line item number.*

(16) Acceptance code.

* Once per contract line, subline, or exhibit line item.

** Once per item.

(f) Material Inspection and Receiving Report for embedded subassemblies, components, and parts requiring unique item identification. The Contractor shall report at the time of delivery, as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the following information:

(1) Unique item identifier of the item delivered under a contract line, subline, or exhibit line item that contains the embedded subassembly, component, or part.

(2) Unique item identifier of the embedded subassembly, component, or part, consisting of--

(i) Concatenated DoD unique item identifier; or

(ii) DoD recognized unique identification equivalent.

(3) Unique item identifier type.**

(4) Issuing agency code (if DoD unique item identifier is used).**

(5) Enterprise identifier (if DoD unique item identifier is used).**

(6) Original part number.**

(7) Serial number.**

(8) Unit of measure.

(9) Description.

** Once per item.

(g) The Contractor shall submit the information required by paragraphs (e) and (f) of this clause in accordance with the procedures at http://www.acq.osd.mil.uid.

(h) Subcontracts. If paragraph (c)(1)(iii) of this clause applies, the Contractor shall include this clause, including this paragraph (h), in all subcontracts issued under this contract.

(End of clause)

252.212-7001 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS APPLICABLE TO DEFENSE ACQUISITIONS OF COMMERCIAL ITEMS (SEP 2004)

(a) The Contractor agrees to comply with the following Federal Acquisition Regulation (FAR) clause which, if checked, is included in this contract by reference to implement a provision of law applicable to acquisitions of commercial items or components.

__XX__ 52.203-3 Gratuities (APR 1984) (10 U.S.C. 2207).

(b) The Contractor agrees to comply with any clause that is checked on the following list of Defense FAR Supplement clauses which, if checked, is included in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items or components.

_XX___252.205-7000 Provision of Information to Cooperative Agreement Holders (DEC 1991) (10 U.S.C. 2416).

_XX___252.219-7003 Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DoD Contracts) (APR 1996) (15 U.S.C. 637).

____ 252.219-7004 Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (Test Program) (JUN 1997) (15 U.S.C. 637 note).

____ 252.225-7001 Buy American Act and Balance of Payment Program (APR 2003) (41 U.S.C. 10a-10d, E.O. 10582).

_XX___ 252.225-7012 Preference for Certain Domestic Commodities (JUN 2004) (10.U.S.C. 2533a).

____ 252.225-7014 Preference for Domestic Specialty Metals (APR 2003) (10 U.S.C. 2533a).

____ 252.225-7015 Preference for Domestic Hand or Measuring Tools (APR 2003) (10 U.S.C. 2533a).

_XX___ 252.225-7016 Restriction on Acquisition of Ball and Roller Bearings (MAY 2004) (____Alternate I) (APR 2003) (10 U.S.C. 2534 and Section 8099 of Public Law 104-61 and similar sections in subsequent DoD appropriations acts).

_XX___ 252.225-7021 Trade Agreements (JUN 2004) (19 U.S.C. 2501-2518 and 19 U.S.C. 3301 note).

____ 252.225-7027 Restriction on Contingent Fees for Foreign Military Sales (APR 2003) (22 U.S.C. 2779).

____ 252.225-7028 Exclusionary Policies and Practices of Foreign Governments (APR 2003) (22 U.S.C. 2755).

____ 252.225-7036 Buy American Act--North American Free Trade Agreement Implementation Act--Balance of Payment Program (JAN 2004) (_____Alternate I) (JAN 2004) (41 U.S.C. 10a-10d and 19 U.S.C. 3301 note).

____ 252.225-7038 Restriction on Acquisition of Air Circuit Breakers (APR 2003) (10 U.S.C. 2534(a)(3)).

_____ 252.226-7001 Utilization of Indian Organizations, Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns (SEP 2004) (Section 8021 of Public Law 107-248 and similar sections in subsequent DoD appropriations acts).

_XX___ 252.227-7015 Technical Data--Commercial Items (NOV 1995) (10 U.S.C. 2320).

_XX___ 252.227-7037 Validation of Restrictive Markings on Technical Data (SEP 1999) (10 U.S.C. 2321).

_XX___ 252.232-7003 Electronic Submission of Payment Requests (JAN 2004) (10 U.S.C. 2227).

_XX___ 252.243-7002 Requests for Equitable Adjustment (MAR 1998) (10 U.S.C. 2410).

_XX___ 252.247-7023 Transportation of Supplies by Sea (MAY 2002) (_____Alternate I) (MAR 2000) (_____Alternate II) (MAR 2000) (____Alternate III (May 2002).

_XX___252.247-7024 Notification of Transportation of Supplies by Sea (MAR 2000) (10 U.S.C. 2631).

(c) In addition to the clauses listed in paragraph (e) of the Contract Terms and Conditions Required to Implement Statutes or Executive Orders--Commercial Items clause of this contract (Federal Acquisition Regulation 52.212-5), the Contractor shall include the terms of the following clauses, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

252.225-7014 Preference for Domestic Specialty Metals, Alternate I (APR 2003) (10 U.S.C. 2533a).

252.247-7023 Transportation of Supplies by Sea (MAY 2002) (10 U.S.C. 2631).

252.247-7024 Notification of Transportation of Supplies by Sea (MAR 2000) (10 U.S.C. 2631)

(End of clause)

DESCRIPTION/WORK STATEMENT/SPECIFICATION
FOR
UNIVERSAL HYDRAULIC TEST STAND

Revised 11/08/04

1.0 Scope. This specification establishes the requirements for a multipurpose hydraulic component test stand to be located in building 117 at Anniston Army Depot, Anniston Alabama designed, fabricated, and installed by the contractor with all functions and capabilities as delineated herein. The contractor shall provide the resources necessary to design, manufacture, install, calibrate and demonstrate the functional operation of one (1) manual hydraulic component test stand. The test stand shall shall be capable of, and provide not less than the following independent circuits: flows up to 60 gpm at 3,000 PSI; flows up to 10 gpm at 5,000 PSI; static pressure of up to 10,000 psi; a bi-directional variable speed drive for testing pumps; and a motor test circuit as described herein. The test stand will be used to performance test various relief valves, hydraulic pumps and motors, selector valve assemblies, and hoses utilizing fire resistant hydraulic oil per MIL-PRF-46170C. This specification describes the minimum anticipated operational and performance requirements.

NOTE: Due to renovations scheduled for building 117, the test stand cannot be installed in the facility until approximately March 2006.

2.0 Applicable Documents.

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposals form a part of this specification to the extent specified herein:

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Regulations

CFR Title 29, Chapter XVII, Part 1910.212 General requirements for all Machines
CFR Title 29, Chapter XVII, Part 1910, Subpart S----Electrical
CFR Title 29, Chapter XVII, Part 1926, Subpart K----Electrical

(Application for copies should be made to the Superintendent of Documents, Government Printing Office, Washington, DC 20402)

ELECTRONIC INDUSTRIES ALLIANCE

J-STD-001C – Requirements for Soldered Electrical and Electronic Assemblies

(Application for copies shall be made to the Institute for Interconnecting and Packaging Electronic Circuits, 2215 Sanders Road, Northbrook, Illinois 60062-6135)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 The National Electrical Code, 1996

NFPA 79-02 Electrical Standard for Industrial Machinery, 2002

(Application for copies should be made to the National Fire Protection Association, One Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101)

UNDERWRITERS LABORATORIES INC.

UL 508 Standard for Safety for Industrial Control Equipment

(Application for copies should be made to Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096

ATTACHMENT #1

2.2 **Order of Precedence.** In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3.0 Hydraulic Requirements. The test stand shall consist of the following major components: hydraulic system, electrical system, cooling system, and all accessories required for proper and efficient operation.

3.1 **Subystems.** The test stand hydraulic system shall consist of the following subsystems: main system pressure circuit, auxiliary pressure circuit, static pressure circuit, supercharge (pump test) circuit, and motor test circuit. All components of the hydraulic system shall be suitable for use with fire resistant hydraulic oil per MIL-PRF-46170C. Independent test capabilities shall be provided by each circuit, as described below:

3.1.1 **Main system pressure circuit.**

3.1.1.1 Flow up to 60 gallons per minute and pressure up to 3000 psi shall be available through needle type shutoff valves at a minimum of two separate outlets.

3.1.1.2 Two additional system pressure outlets shall be provided. One shall be through a shutoff valve, and the other shall be through a four-way, three position, open selector valve with center port connected to the return line.

3.1.1.2 A system by-pass line shall be provided, and shall be equipped with a needle type shutoff valve to control the supply pressure.

3.1.1.3 One return port connected to the flowmeter(s) shall be provided, and a minimum of two additional separate return ports shall be provided. A flowmeter with a minimum accuracy of 0.5 GPM shall be provided for measuring flows up to 5 GPM. In addition, a sufficient number of flowmeters shall be provided to insure 1% accuracy over the entire range of the flow. See paragraph 9.0 for typical component flow requirements.

3.1.2 **Auxiliary pressure circuit.**

3.1.2.1 An additional (auxiliary) pressure circuit consisting of a 10 gallon per minute, 5000 psi minimum pump shall be provided for testing items which require more than one supply flow.

3.1.2.2 As a minimum, the auxiliary circuit shall be made up of a single outlet through a shutoff and a by-pass line with a needle type shutoff valve. A sufficient number of flowmeters shall be provided to insure 1% accuracy over the entire range of the flow. See paragraph 9.0 for typical component flow requirements.

3.1.3 **Static pressure circuit.**

3.1.3.1 An air operated pump shall be built in the system and shall provide a static pressure up to 10,000 psi as a minimum. The pump shall be operated by existing shop air (approximately 100 psi).

3.1.4 **Pump test circuit.**

3.1.4.1 This circuit shall be used as the hydraulic pump test system.

3.1.4.2 A settable flow (0-60 gpm) and pressure (0-100 psi) shall be provided by a supercharge pump to enable testing of various hydraulic pumps.

3.1.4.3 The pump test circuit shall include a bi-directional (clockwise and counterclockwise rotation) variable speed drive. The variable speed drive shall be a solid state electronics controlled motor drive and rated suitable for the intended application. The motor shall provide 80 HP minimum at the output drive shaft. Maximum anticipated torque requirements are approximately 236 foot pounds at 1800 RPM.

3.1.4.4. The speed control for the variable speed drive shall provide an infinitely variable adjustment throughout the speed range, with speed regulation of 0.5% or better. Speed range shall be 0 - 4800 RPM minimum, bi-directional. A digital speed indicator with a minimum accuracy of +/- 0.5 % shall be provided on the test stand front panel.

3.1.4.5 The pump test system shall include a torque sensor with a minimum range of 0 to 300 foot pounds. A digital indicator (including an appropriate strain gage conditioner) with a minimum accuracy of +/- 0.5 % shall be provided on the test stand front panel.

3.1.5 **Motor test circuit.**

3.1.5.1 The hydraulic motor test circuit shall include a dynamometer rated to provide a resistance of approximately 236 foot pounds minimum at 1800 RPM.

3.1.5.2 The dynamometer shall include a torque sensor with a minimum range of 0 to 300 foot pounds. A digital indicator (including an appropriate strain gage conditioner) with a minimum accuracy of +/- 0.5 % shall be provided on the test stand front panel.

3.1.5.3 Both the main pump and auxiliary pump shall be a variable delivery, pressure compensated type with volume controls located on the test stand front panel. The electric motor for the main pump shall be rated 100 HP minimum.

3.1.5.4 The motor test circuit shall include a DC power supply for testing hydraulic power pack assembly part number 12282832. The power supply shall be capable of providing 24 +5/-0 volts DC at up to 62 amperes. The power supply shall contain a digital ammeter and voltmeter.

3.2 **Material.** All material used shall be as specified herein. Material not specified shall be of the best quality used for the purpose in good commercial practice. The material shall be free from all defects and imperfections that might affect the serviceability of the finished product.

3.2.1 **Protective treatment.** Materials used in the construction of the equipment that are subject to deterioration when exposed to climatic and environmental conditions likely to occur during service usage shall be protected against such deterioration in a manner that will in no way prevent compliance with the performance requirements of this specification.

3.2.2 **Metals.** Metals shall be of corrosion resistant type, unless suitably protected to resist corrosion during normal service life and shall be suitable for the application intended. Metals not resistant to corrosion shall be dull zinc, or dull nickel plated.

3.2.2.1 **Dissimilar metals.** Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other.

3.2.3 **Plating.** All fixtures, adapters, and couplings that are not made of corrosion resistant materials or anodized aluminum shall be dull zinc, or dull nickel plated. Plating shall be in accordance with standard commercial practice for this type of equipment.

3.3 **Design and construction.**

3.3.1 **Design.** The design, layout, and assembly of the cabinet and its component parts shall be such as to facilitate high volume production of units under test (UUT) and ease of maintenance.

3.3.2 **Structure.** All components shall be located within an all-metal, fully enclosed cabinet suitably braced to carry the load imposed. The cabinet shall be fully guarded to shield fan blades, heating coils, electrical connections, and any other component parts that may present a safety hazard to the operator. The cabinet shall be so

constructed that it will withstand transportation by common carrier without damage. Instrument panels shall be constructed of 11 gage or heavier metal suitable for the purpose. Doors and cabinet panels other than instrument panels shall be a minimum of 14 gage metal. The cabinet or enclosure shall be rated for indoor use and shall provide a degree of protection against dust, falling dirt and dripping non-corrosive liquids.

3.3.3 **Size.** Test stand cabinet size shall not exceed 13 feet length by 8 feet depth (depth from the operator's side of the stand to the rear) by 7 feet height. These dimensions do not include any remotely located hydraulic power supply.

3.3.4 **Base design.** All cabinets and sections shall include longitudinal channels or other approved base design to permit the use of a standard fork lift truck for positioning or moving purposes. These provisions shall be a permanent part of the test stand, of sufficient strength and rigidity to support the load without undue stress or strain on the test stand itself, and shall be so arranged as to distribute the floor load evenly over the floor space occupied by the test stand.

3.3.5 **Accessibility.** The cabinet shall be of sufficient size to accommodate all components in an accessible manner. All internal components of the test stand shall be easily accessible. The test stand shall be designed to allow access for overhead hoist loading/unloading of heavy components. All controls for operating the test stand shall be located outside the safety shield required by paragraph 3.3.10.

3.3.6 **Toe clearance.** Toe clearance shall be provided at the operator's position on the test stand, a minimum of 6 inches height and 4 inches depth.

3.3.7 **Storage space.** A suitable storage area or space shall be provided for the operating manual and other documentation for the test stand. This area or space shall be permanently attached to the test stand, and shall be readily accessible.

3.3.8 **Leveling.** Provisions for leveling the test stand shall be provided.

3.3.9 **Work area.** A flat table top work area shall be provided for the operator, a minimum of 18 inches long by 18 inches wide.

3.3.10 **Safety shield.** A sliding door type transparent safety shield constructed of Lexan or equivalent shall be provided and shall extend the entire length of the test stand. This shield shall protect the operator from possible hydraulic spills or inadvertent hose ruptures during tests.

3.3.11 **Vibration.** The cabinet shall be constructed so that vibration from components such as pumps and motors shall not be transmitted through the structural members to any instrumentation, thus impairing readability and accuracy.

3.3.12 **Lights.** If required for maintenance purposes, any lighting required shall be vapor proof, of ample wattage, and be powered by nominal 120 volt, single phase, 60 Hertz current. Guards shall be provided around incandescent light bulbs to prevent personnel contact and inadvertent bulb breakage.

3.3.13 **Ventilation.** Louver type air vents shall be provided in the cabinet to promote air circulation, or the cabinet shall be provided with forced ventilation to prevent overheating of instruments and any electrical/electronic components.

3.3.14 **Work bench/drip pan.** The work bench shall be a tray provided at the front of the test stand and shall be arranged in such a way that it is used as a sump, with all outlets located along the edge of the tray. The sump drain shall be piped by to the reservoir. Tray dimensions shall be 18 inches wide by 108 inches long minimum.

3.3.15 **Panel holes.** All holes through test stand panels which may be required for installation of valves and fittings shall be of a standard size and type to permit replacement without rework of the panels.

3.3.16 **Timer.** A digital timer shall be provided on the front of the test stand. The timer shall have a range of at least 60 minutes with 1 second increments. The timer shall be equipped with start/stop button and a reset button.

3.3.17 **Gages.** All gages shall be provided with a tap on the test stand front panel, connected between the gage and gage shut-off valve to permit calibration of the gage. Gages subject to continuous surges or extreme pressure fluctuations shall be protected by snubbers or dampeners. All gages shall be accurate within 1% and shall be readable by the operator from the test stand front panel.

3.4 **Additional requirements.**

3.4.1 **Electrical.** The test stand shall be designed to operate on 230/460 volt, three phase, 60 hertz electrical power. All wiring methods and practices shall conform to National Fire Protection Association (NFPA) 79-02 and NFPA 70. Industrial control devices for starting, stopping, regulating, controlling, or protecting electric motors shall conform to the requirements of Underwriters Laboratories UL 508. Adjustable-speed drives and accessories for use with adjustable-speed drives are covered by the Standard for Power Conversion Equipment, UL 508C. Devices that regulate temperature and/or control refrigeration equipment are covered by the Standard for Temperature-Indicating and –Regulating Equipment, UL 873, and other applicable standards. All electrical wiring and components shall be sized for both 230 VAC and 460 VAC operation. The test stand shall be wired for 460 VAC initial operation. The contractor shall supply the main electrical disconnect for the test stand. This disconnect may be mounted on the existing building wall behind the test stand. The Government shall provide 460 volt, three phase power to the main disconnect.

3.4.2 **Electrical noise.** The electrical power at Anniston Army Depot is subject to noise. If the test stand requires clean electrical power for proper operation, the contractor shall supply a properly sized power conditioning unit with the test stand. If the test stand is susceptible to interference from adjacent industrial machinery, the contractor shall provide proper shielding with the test stand to minimize test stand malfunctions.

3.4.3 **Safety and Health Requirements.** The test stand shall be in compliance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.212. The test stand shall include warning lights/indicators to alert the test stand operator to unsafe operating conditions. The test stand shall include at least one category 0 (uncontrolled) emergency stop switch as defined by NFPA 79-02 which shall immediately remove power to the machine actuators. Hinged or sliding doors containing ready access to moving parts that may pose a hazard shall be interlocked.

3.4.4 **Noise Level.** Noise emitted by the test stand shall be no greater than 80 decibels as measured per ANSI S12.23-1989. The 80-decibel limit is absolute. Techniques such as sound level averaging or exposure time weighing shall not be used in meeting this requirement. Any shields, baffles, enclosures or other devices required to bring the equipment into conformance with this requirement shall not interfere with visibility needed for safe operation of the test stand.

3.4.5 **Hydraulic Test Fluid.** As a minimum, the test stand shall operate with the following test fluid: fire resistant hydraulic oil per MIL-PRF-46170C.

3.4.6 **Fluid Temperature Control.** The test stand shall be capable of regulating the temperature of the test fluid within ± 5° Fahrenheit of the fluid temperature set point. A digital readout indicating the test fluid operating temperature shall be provided. The test stand shall be capable of displaying the test fluid temperature with an accuracy of ± 2%.

3.4.7 **Filtration.** Test stand filtration shall be equipped with standard commercial type elements. All filters used on the test stand shall be equipped with gages or pressure switches to indicate the pressure drop (differential) across the filter. The test stand shall have a means to warn the operator when filters require service or replacement. The contractor shall be responsible for selection of the appropriate micron rating of any return line and/or inlet filters. A suitable strainer, which shall be easily accessible for removal and cleaning, shall be provided between the reservoir and inlet to the pumps.

3.4.8 **Water Removal.** The test stand shall include a means to remove any accumulated water from the hydraulic oil.

3.4.9 **Reservoir.** The test stand shall have a 75 to 100 gallon capacity hydraulic oil reservoir. The test stand shall have a gauge for indicating the oil level in the reservoir and a temperature indicator. The test stand shall have a sump or other means to capture and return to the reservoir any oil released from hoses and the component being tested during the process of disconnecting the component from the test stand. The reservoir shall be accessible to allow cleaning of the interior of the hydraulic reservoir.

If the test stand is designed with a separate (remote) hydraulic power supply, it is probable that the hydraulic power supply will be placed outdoors. The hydraulic power supply shall be designed to withstand expected climatic extremes encountered in Anniston, Alabama, such as freezing temperatures, hail, acid rain, etc.

3.4.10 **Hydraulic Fluid Containment.** The test stand shall include a fluid containment system capable of containing the maximum volume of hydraulic oil the test stand can hold (including oil in hoses and components under test) in case of a major fluid spill. In accordance with 40 CFR § 112, the containment system shall be constructed so that any discharge from a primary containment system, such as a reservoir or pipe, will not escape the containment system before cleanup occurs. The fluid containment system shall be easily accessible so that it may be emptied. If the fluid containment system extends beyond the outside boundaries of the test stand walls, it shall be covered in such a way as to prevent a tool from being dropped into or a person from stepping into the oil containment area.

3.4.11 **Cooling System.** As a minimum, cooling of test fluid shall be accomplished through a standard commercial type heat exchanger using cold water where the required test fluid temperature is above 80° F. The heat exchanger shall be off sufficient size to provide the required cooling at all times when operating at a hydraulic fluid temperature in the range of 70° to 180° F, using cooling water at approximately 70° F with an operating pressure of 40 to 70 psig. The preferred cooling system shall be closed-loop, requiring only make-up water. The cooling system offered with the proposed test stand will be a trade-off factor in the technical evaluation of the contractor's proposal.

3.4.12 **Immersion Heaters.** Test fluid temperatures above ambient shall be obtained by the use of immersion heater(s). Installation shall provide for the heater element(s) to be totally immersed in the fluid to a minimum dept of 6 inches when the test fluid is at its lowest operating level. The reservoir in which the immersion heater(s) are installed shall be equipped with an NFPA approved nationally recognized laboratory listed automatic over-temperature shut-off switch that will automatically shut the heater(s) off at 15° F above the maximum reservoir operating temperature. The reservoir shall be provided with a low fluid level switch that will shut down the test stand when the fluid level is less than 6 inches above the heater element(s). The immersion heater(s) shall be equipped with a manual temperature setting control. These heater(s), in conjunction with the heat exchanger in paragraph 3.4.11 shall maintain the temperature of the fluid within +/- 5° F when the control is set in the range of 70° to 180° F.

3.4.13 **Calibration.** The test stand shall include a calibration procedure that provides step-by-step instructions throughout the calibration procedure. The procedure shall include a list of all test equipment required to perform test stand calibration. Any special adapters, fixtures, tooling, etc. required to perform calibration shall be provided with the test stand.

3.4.14 **System of Units.** The test stand shall display all units of measure in the U.S. Customary System of Units.

3.4.15 **Utilities.** The following utilities are available at the installation site:

Electrical: 3 Phase, 60 Hertz, 460 Volts
Shop Air: 100 PSI
Water 75 PSI

3.4.16 **Drainage.** The contractor shall place drain lines or tie into existing sanitary, storm, or industrial waste lines as required for the test stand. If the test stand requires connection to a waste line, the contractor shall be responsible for all work required to connect the test stand to the waste line. The contractor is responsible for ensuring that all test stand drain line connections meet all applicable environmental rules and regulations.

3.4.17 **Ergonomics.** The test stand shall be ergonomically designed to prevent the occurrence of repetitive stress injuries.

3.4.18 **Maintainability.** The test stand shall be constructed using commercial off-the-shelf components to the maximum extent possible to ensure the availability of repair parts. The contractor shall provide information on the normal maintenance actions required for the test stand including type of maintenance, required interval, mean time to perform maintenance and number and skill of people required to perform the maintenance actions.

3.4.19 **Construction.** The test stand shall be constructed of corrosion resistant material to the maximum extent possible.

3.4.20 **Nameplate.** A nameplate shall be attached to the test stand and shall contain, as a minimum, the following information:

a. Nomenclature.
b. Manufacturer's name.
c. Serial number.
d. Test stand model designation.
e. Power input (volts, total amperes, phase, and frequency).
f. Short-circuit/over current rating.
g. Contract number or purchase order number.
h. National stock number (if applicable).
i. Date of manufacture.

3.4.21 **Lubrication Plate or Chart.** A lubrication plate or chart shall be attached to the test stand. The information provided on the plate or chart shall include:

a. Points of lubricant application.
b. Servicing interval.
c. Type of lubricant(s) with SAE number or lubricant identifier.

3.4.22 **Environmental Compliance.** The test stand provided under this contract shall meet all applicable Environmental Protection Agency (EPA) restrictions in effect on the date of the contract. These regulations apply to the emission of materials hazardous to the environment or the user's health and shall be adhered to during the manufacture, service, transportation, storage and operation of the test stand.

3.4.23 **Recovered Materials.** The contractor is encouraged to use recovered materials to the maximum extent possible in accordance with Federal Acquisition Regulations (FAR).

4.0 Calibration. Upon completion of test stand installation (see section 5.0 herein) at ANAD, the contractor shall verify test stand calibration using the calibration procedure and test equipment provided with the test stand per paragraph 3.4.13 herein. Test stand calibration shall be performed by ANAD calibration personnel and verified by the contractor. Training for ANAD calibration personnel shall be provided (see requirements of paragraph 7.0 herein).

4.1 Performance Test. Upon completion of test stand calibration, the contractor shall demonstrate the test stand's ability to perform manual testing. Testing shall be demonstrated on each of the components listed in Appendix 1 to this specification. See general performance requirements for these components in paragraph 9.0. One each of the components shall be Government Furnished Equipment (GFE) provided to the contractor during the design phase. During these tests, the contractor shall demonstrate proper operation of all test stand controls,

functions and features. All tests shall be witnessed by the ANAD Contracting Officer or Contracting Officer's Representative. Should a test stand malfunction or failure occur during any test, the contractor shall correct the problem and repeat the complete test on that component.

4.2 Acceptance. Preliminary acceptance of the test stand shall consist of an inspection. The Contracting Officer's Representative (COR) shall conduct an inspection of the test stand to verify that all requirements of this specification have been met. The inspection shall be conducted at the contractor's facility. The contractor shall be present, and shall be notified in writing if any deficiencies are discovered. The test stand shall not be shipped to Anniston Army Depot until successful completion of the inspection. Final acceptance testing shall be conducted at Anniston Army Depot in accordance with paragraph 4.1. The final acceptance test will be considered successful when the assemblies of paragraph 4.1 are tested with no failures, as evidenced by data recorded from the test stand gages and/or instrumentation. The Contracting Officer's Representative (COR) may give consideration to failures deemed unrelated to the test stand (i.e. acts of God, failure of the unit under test, etc.) or otherwise insignificant. However, the Contracting Officer or his/her designated representative shall have sole authority in resolving disputes that may arise from failures during the final acceptance test. The Government will accept the test stand only after the contractor successfully completes the requirements of paragraphs 4.0, 4.1, and 4.2 herein.

5.0 Installation and Delivery. The contractor shall be responsible for delivering and installing the proposed test stand in building 117 at Anniston Army Depot. Once the test stand is delivered to ANAD, the contractor shall have 30 calendar days to install the test stand and complete all test stand acceptance requirements per paragraph 4.2 herein. The training required per paragraph 7.0 herein shall commence immediately following acceptance of the test stand.

NOTE: Due to renovations scheduled for building 117, the test stand cannot be installed in the facility until approximately March 2006.

5.1 Delivery. The contractor shall be responsible for delivering the test stand to building 117 at Anniston Army Depot. The contractor shall notify the ANAD Contracting Officer at least 14 days before the test stand is to be shipped.

5.1.1 **Shipping, Handling, and Storage.** The contractor shall be responsible for all shipping, storage, and handling of the test stand and all materials. The Government shall not be responsible for furnishing any labor, equipment, or warehouse space for the loading, unloading, and storing of the test stand or any materials. There are no docks at building 117 for unloading the test stand from a trailer. If a dock is required for unloading the test stand, the test stand will have to be unloaded at building 513 at Anniston Army Depot and then transported to building 117 (a distance of approximately 1/2 mile). If the test stand is unloaded at building 513, the contractor will be responsible for all labor and equipment required to move the test stand to building 117.

5.2 **Installation.** The contractor shall be responsible for installing the test stand, including all labor and materials required for the complete installation. The contractor shall be responsible for insuring that the installation is compatible with existing facilities. Unless otherwise approved by the Contracting Officer, installation shall be done during normal depot working hours. The area near where the equipment is to be installed is in use for production operations. The contractor shall not interfere with ongoing Government operations and production unless authorized by the Contracting Officer. After installation is complete the test stand shall be ready for operation in accordance with the requirements herein.

SAFETY NOTE: Floor surfaces inside and outside building 117 near the installation site may be slippery due to leakage of hydraulic fluid from components being repaired in the shop. All contractor employees working in this area must use extreme caution. Furthermore, eye, foot and hearing protection are required inside building 117 at the installation site. The contractor will be responsible for ensuring that all of its employees, as well as any subcontractors, are aware of these safety requirements and take the necessary precautions to ensure employee safety.

NOTE: Due to renovations scheduled for building 117, the test stand cannot be installed in the facility until approximately March 2006.

5.2.1 **Installation Plan.** Within 270 calendar days after award of contract, the contractor shall provide an installation plan for the test stand to the Contracting Officer. This document shall include the following information as a minimum:

a. The contractor's plan for bringing the proposed test stand into the building.
b. Estimated time required to install the proposed test stand.
c. A drawing showing the layout of the proposed test stand in building 117. The drawing shall identify the major components of the test stand (i.e. operator's control console, fluid containment system, reservoir, etc.).
d. A drawing showing the dimensions of the test stand and the locations and sizes of all utilities connections to the test stand.
e. A drawing showing test stand drain line locations and how/where these will be connected to an existing drain line at the installation site (if applicable).

5.2.2 **Electrical.** All electrical work shall comply with American National Standards Institute (ANSI) Publication C2 – National Electric Safety Code and with National Fire Prevention Association (NFPA) Publication No. 70 – National Electric Code. All materials used in the installation shall conform to applicable National Electrical Manufacturers Association (NEMA) and Underwriters Laboratory (UL) listings. Workmanship shall be in accordance with standard commercial practices. Runs shall be installed perpendicular and parallel to existing facilities and the equipment to be installed. When equipment is installed near existing power lines, equipment shall be located for proper clearances in accordance with ANSI C2. New equipment shall not be connected to Government power without prior approval of the Contracting Officer. No high voltage work will be accomplished without prior approval of the Contracting Officer. All connections to Government power and all high voltage work shall be performed in the presence of a qualified Government electrician.

5.2.3 **Plumbing.** All plumbing work shall comply with National Association of Plumbing-Heating-Cooling Contractors/American Society of Plumbing Engineers (NAPHCC/ASPE) Publication - National Standard Plumbing Code. All materials used in the installation of the equipment shall conform to industry standards and shall be compatible with and shall meet the performance requirements of the equipment being installed. Workmanship shall be in accordance with standard commercial practice. Runs shall be installed perpendicular and parallel with existing facilities and the equipment being installed. Bypasses shall not be installed at steam reducing stations. All heating coils shall be trapped independently. Unless otherwise specified, steam and condensate piping shall be insulated with 1-1/2 inch thick calcium silicate with aluminum cover for outside lines and 1-1/2 inch thick fiberglass with all service jacket for interior lines unless subjected to water or vapor.

5.2.4 **Concrete.** Concrete used in the installation of the equipment shall be Class A and shall have a minimum allowable compressive strength at 28 days of 3,000 PSI unless otherwise specified. Samples for concrete strength tests shall be provided, stored, and tested as directed. Unless otherwise specified, the contractor shall be responsible for the design of all concrete work, including formwork and reinforcing. Ready-mixed concrete shall be used and must be delivered and discharged within 45 minutes after the introduction of water to the cement and aggregate.

Placing of concrete shall conform to Chapter 4 of the American Concrete Institute Standard ACI 318. Workmanship shall be in accordance with standard commercial practice.

5.2.5 **Trades.** Coordination of trades installing the equipment shall be the responsibility of the contractor.

5.2.6 **Foundation Hardware.** All foundation hardware required for installation of the test stand shall be furnished by the contractor and included in the bid price.

5.2.7 **Utilities.** The contractor will be responsible for making all test stand utilities connections. The utilities available at the test stand installation site are specified in paragraphs 3.3.1 and 3.3.1.1 herein.

5.2.8 **Equipment Protection.** The contractor shall protect the surrounding shop area and equipment near the installation site from damage due to dust, debris, etc., during the installation.

6.0 Documentation. The contractor shall provide documentation with the test stand as specified in paragraph 6.1 herein and on the attached DD Form 1423. The contractor shall provide four electronic copies of all documentation. The electronic documentation shall be provided on compact discs (CD-ROMs). Electronic copies of the documentation shall be in Microsoft Office format (Word, Excel) or Adobe Portable Document Format (PDF). Drawings and schematics may be provided in PDF, AutoCAD (.dwg) or Microstation (.dgn) format.

6.1 **Content.** The documentation shall include the following: operator's manuals, maintenance manuals, calibration specifications/procedures, catalogs, and spare parts lists. Maintenance manuals shall include electrical, hydraulic, and pneumatic schematics, as applicable, detailed lockout/tag out procedures, parts lists, troubleshooting procedures, preventive maintenance requirements, lubrication schedule and any other maintenance procedures normally provided by the manufacturer. Schematics shall show and identify all parts down to and including components on printed circuit boards. Catalogs shall fully describe all special tooling, fixtures and attachments available for the equipment being furnished. The recommended spare parts lists shall be complete with part numbers and descriptions, required quantities, prices, and estimated delivery time for the items. In addition, any other commercial vendor literature normally furnished with the test stand shall be provided. All documentation shall be furnished in the English language.

7.0 Training. The contractor shall provide 3 days total of training for the operation, maintenance, and calibration of any equipment provided by the contractor, and shall be conducted immediately upon conclusion of all acceptance testing. Training shall be conducted at Anniston Army Depot, Anniston, Alabama during normal depot working hours and on consecutive days, if possible, for a maximum of 10 Government personnel.

8.0 Warranty. The test stand shall be covered by a warranty. The warranty period shall begin the day following Government acceptance of the test stand. During the warranty period, the contractor shall be responsible for all costs, including parts, labor, travel and lodging, required to complete repairs of any defects in test stand parts or workmanship. The contractor shall respond to requests for warranty service within 48 hours after requests.

8.1 **Warranty Period.** As a minimum, the test stand shall be covered by a 1-year warranty as specified in paragraph 8.0 above. The preferred warranty period for the test stand is 2 years. The warranty period offered with the proposed test stand will be a trade-off factor in the technical evaluation of the contractor's proposal.

9.0 Typical component performance requirements. (See Appendix 1 for detailed drawings)

Hydraulic Power Pack Assembly (12282832)
At 1600 +0/-50 PSIG, with 24.0 +5/-0 VDC applied, and at 90° +/-5°F, the minimum flow and maximum amperage requirements shall fall on or below the curve in Figure 4 of 122882834. This curve ranges from approximately 1.13 GPM at approximately 57.5 amperes, up to a maximum of approximately 1.25 GPM at approximately 62 amperes.

Valve (9377604)

With pressure increasing from 0 PSIG at port P1, at 1250 PSIG at P1 and 0 PSIG at P2, the flow shall be less than 0.5 GPM. With 1450 +/- 50 PSIG at P1 and 0 PSIG at P2, the flow shall be 1.25 GPM minimum. With pressure applied to port P2, flow from P2 to P1 shall be 1 GPM minimum at 25 +/-5 PSID.

Pump, hydraulic (13211E3126)
Required characteristics:
Pump delivery: 31.5 GPM @ 1800 RPM
Working pressure: 3800 PSI
Hydraulic fluid: MIL-PRF-46170C
Fluid temperature: 180°F +/- 5°

Hydraulic actuator, ammo door (12310541)
Hydraulic fluid: MIL-PRF-46170C
Fluid temperature: 150°F +/- 25°
Proof Pressure: 2500 PSIG
Burst Pressure: 4000 PSIG
Operating Pressure: 1650 +/-50 PSIG
Static seals: No leakage is permitted at body seals when either port M1 and/or M2 is pressurized to 1650 +/-50 PSIG and held for three minutes.
Dynamic seals: With port M1 or M2 pressurized to 1650 +/-50 PSIG, no flow from the opposite port shall be allowed. Up to 2 CC shall be allowed in three minutes at 150°F +/- 50°.
Rod seal: Cumulative leakage shall not exceed a slight wetting of the external surface (insufficient to form a drop) per 25 full travel cycles at 2500 and 200 PSIG and at 150°F.
Cushioning requirements: Piston cushioning to decelerate a 270 lb. mass (attached to the piston rod) from 25 IN/Sec minimum to 10 IN/SEC maximum within specified distance at either end of stroke with 1650 +/-50 PSIG system pressure and at 150°F +/- 25° oil temperature.